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THE BILIARY TRACT

BY HARRY C. CLIFTON, M.D.,* AND BENEDICT B. LANDRY, M.D.*

UNTIL quite recently it might have been truly said that all progress in the medical and surgical treatment of biliary tract disease had been made without knowing the causation of gall stones or of inflammation along this tract. Such a statement now would be erroneous. While there have been no new, outstanding operative procedures, nor do any appear likely at present, there has been advanced much knowledge of an important nature, and it would seem that an evaluation of many new facts and conceptions regarding this frequently diseased tract would have considerable bearing on the choice of operative procedure in the individual case.

It was not so long ago that the presence of jaundice or of gall stone colic was considered essential to the diagnosis of gall bladder disease, or of gall stones. Cholecystostomy and cholecystotomy were the operations first evolved, and only a little over fifteen years ago Deaver stated that he avoided the removal of the gall bladder where possible, feeling "that if a second operation became necessary, we might be only too glad we had previously drained it." But as stones recurred, or the left-in gall bladder became functionless, because of inflammatory changes, or encumbered in its functions by adhesions, thus producing recurrence of symptoms, such a viewpoint gradually changed. Now, the surgeon just mentioned, continually conversant and especially interested in the advancement of our knowledge of organs of the right upper quadrant, along with a vast operating room experience, and no small amount of experimental investigation, is foremost among those advocating the removal of the gall bladder in almost every case of disease, not only of this organ itself, but with pathology anywhere along the biliary tract. Today, there are not a few who champion the removal of even normal appearing gall bladders after careful clinical investigation has apparently ruled out any other cause for the digestive symptoms of the patient. So that in a short period there is noted a tremendous difference in the surgeon's attitude toward disease of the biliary tract, especially of the gall bladder. Whereas before the end-stages of such disease, as manifested by colic or by jaundice, were diagnosed, we have now come, aided greatly by the cholecystographic method of examination, to recognize disease of the gall bladder nearer the period of its inception. Instead of waiting for marked signs and symptoms, we are being directed mainly by symptoms to examine for and interpret altered function. Besides the Graham-Cole dye method, the liver-function tests of Rosenthal and Vandenbergh have added somewhat to our knowledge and helped us in diagnosis. The emphasis of the importance of the liver, its relationship to the gall bladder and the pancreas, the introduction of intravenous calcium as an effective reducer of the coagulation time are among many recent developments that have aided us in more successfully treating these conditions. Whereas, further, gall bladder disease was considered rather peculiar to later life, we are now (more frequently) looking for and finding it in the early decades. (In a series of cases recently reviewed, there were two women, each aged 24 years, both of whom had acute cholecystitis, one with stones, and last year we reported a case of acute cholecystitis with stones in a child aged eleven years.) The number of such cases reported in the literature is rapidly mounting, Potter having recently reported 226 cases of proven cholecystitis in individuals under the age of fifteen. Dwyer and Blackford studied 2,225 consecutive histories of patients with gastric symptoms; 352 had an organic gastric lesion, but in 80% the cause of the symptoms was not in the stomach. These statistics, along with others, have led to the conclusion being quite definitely arrived at that disease of the biliary tract, especially of the gall bladder, is the most common organic cause of dyspepsia, so that with such measures advocated as removal of the normal looking gall bladder in patients with atypical digestive symptoms and absence of any pathology in other abdominal organs, we feel that the day is not far distant when the gall bladder, unless great care and caution are exercised, will rival the appendix in the frequency of its removal, with all the stigma bestowed on surgery by unwisely done cholecystectomies that it has received in the past from too frequent ill-advised appendectomies.

Because of the rapidly accumulating and important additions to our knowledge, the variance in viewpoints and interpretations and the lack of uniformity of opinion, it is well for us from time to time to survey the known facts and most plausible theories, to examine critically the records of work done and outline our course for another while.

*Clifton—Surgeon, St. Francis Hospital, Hartford. Landry—Assistant Surgeon, St. Francis Hospital and Municipal Hospital, Hartford, Conn. For records and addresses of authors see "This Week's Issue," page 595.

The surgeon can no longer be concerned solely with pathological entities along the biliary tract, and their technical alleviation, but must have in mind the known physiological, biological and chemical facts relating to it, and relationship of the various structures comprising the tract to each other, to other more distant organs, and to the body in general.

Strangely, the importance of the largest organ in the body has only in recent years been stressed. Old-fashioned biliousness is now early cholecystitis or hepatitis. The liver has been determined to have a multiplicity of functions which may be here briefly summarized: (1) the secretion and excretion of bile; (2) the maintenance of blood-sugar level by the storing of glycogen; (3) detoxifying and (4) bactericidal powers. It also has (5) a little known rôle in iron metabolism; (6) acts as a warehouse of fat taken as food; and (7) assists in the metabolism of proteins.

As to the functions of the gall bladder, other than its acting as a reservoir of bile, and perhaps having something to do with the flow of bile through its intrinsic musculature and elastic recoil, it has been shown almost conclusively to have absorptive and concentrating properties.

It is generally accepted that infection is by far the most common cause of biliary tract pathology, if not the universal cause. Stones, especially cholesterin stones, may at times result from altered chemistry of the bile, but frequently it is infection which initiates the disturbance in concentration or precipitation of bile, leading to their formation. Wilkie, injecting streptococci directly into the walls of the gall bladder, was able to produce small stones. The frequency of gall stones in women, particularly those having had children (of 81 chronic cases 52 had stones; of 19 acute cases, 17 were married and 16 had borne children) seems to bespeak a chemical cause, and it has been shown that there is a hypercholesterolemia during pregnancy and menstruation which would tend to support this view. But if we consider the frequency of infection in relation to childbearing, phlebitis, mastitis, pyelitis, and other postpartum infections, and the increased chances of infection because of repeated pregnancy, we have added support for the contention that infection is even the sole cause.

Judd and Mann, in 200 cases of gall bladder disease, found that 31% of those having stones gave positive cultures from the stones themselves. Even granting that stones may be formed at times by purely chemical processes, it is far more often infection than colic which leads to the train of symptoms or to conditions which bring the patient to operation.

Despite, however, the acknowledgment of infection as the most common cause of gall bladder disease, there is not any such universality of belief as to how infection reaches the gall bladder, and how it is spread to other organs comprising the so-called biliary tract.

The view of ascending infection from the duodenum along the common and cystic ducts has not the general acclamation it once received, and there is evidence, both of a clinical and experimental nature, against such a route. Firstly, the duodenal contents have frequently been found to be sterile even in known cases of cholecystitis. Further, the bacteria most commonly associated with gall bladder disease, namely streptococci and bacilli of the coliform group, very rarely are found in the duodenum. Moreover, the good results obtained in the early operation for ruptured duodenal ulcer with tight abdominal closure afford clinical proof of the paucity, the low virulence, or the frequent absence of bacteria in the duodenum, and this even takes into consideration the known power of the peritoneum to overcome the infectious onslaught. Other ruptured abdominal viscera, operated on just as early, do not so often have such innocuous contents.

Another route, and there is considerable basis for the view that it may be a very common one, is by way of the blood stream. Rosenow has infected the gall bladders of animals with streptococci which seemed selective in type. Wilkie, who has done much experimental work in this connection, believes that intra-mural infection is the most common cause of gall bladder disease, which would presuppose the arrival of infection via the blood stream. He has injected the wall of the gall bladder in animals and produced changes of a pathological nature similar to those occurring in the human being. Interesting among Wilkie's experiments was the separation of the gall bladder from the liver to preclude lymphatic extension with further interpolation of omentum and ligation of the cystic duct. Under these conditions he produced infection of the gall bladder by placing streptococci into the circulation, and concluded that cholecystitis was generally a blood-borne streptococci infection. Illingworth of Edinburgh, studying the gall bladder bacteriologically in a series of 50 operated cases, found infection in the wall in 62%; in 34% streptococci were present, and in 17% coliform bacilli, and both of these organisms were present in 5%. In only 40% of these cases, on the other hand, was the bile in the gall bladder itself infected.

Judd and Mann, in their study of 200 cases, found 49% of gall bladders giving positive cultures from the wall, mostly streptococci. Illingworth, as do Rosenow and Moynihan, thinks that infection occurs because of conveyance by the blood stream from a distant focus, such as the teeth or tonsils. Here again we would emphasize the possibility of such conveyance in women who have borne children, because of the many chances of infection.

Another way is by the portal circulation, or systemic blood stream to reach the liver and be excreted into the bile. This is undoubtedly one of the means of conveying infection to the gall bladder, though occurring infrequently. In-

flammations anywhere along the portal system are apt to cause a hepatitis or cholangitis. Occasionally we see evidence of this in the development of jaundice following acute appendicitis and even at times suppurative hepatitis. The spread of such inflammation to the gall bladder is brought about via the excreted bile. The evidence, however, is against this manner of inoculation of the gall bladder except in a small percentage of cases. Graham and Peterman have experimentally shown that it is almost impossible to infect the gall bladder by contaminated bile unless the cystic duct be clamped, or the gall bladder traumatized. Wilkie put streptococci directly into the lumen of gall bladders with almost no changes resulting. The finding of only 40% with infected bile in Illingworth's series of 50 cases is further against this route as the common one. We believe that this manner of infection of the gall bladder more often takes place in those cases of chronic cholecystitis with stones, which are made acute because bacteria, brought to the liver weakened in its bactericidal power, are excreted in the bile and find a gall bladder devitalized by the trauma and irritation of stones, such conditions being similar to those which Graham and Peterman produced experimentally.

Most important channels, and perhaps equal in frequency to any, are the lymphatics. While there are, indeed, oppositely held views as to their rôle, the evidence thus far, both anatomical and especially clinical, to our minds favors the belief that they play a major part in conveyance of infection to the gall bladder and along the biliary tract.

A flow of lymph occurs from the liver to the gall bladder and vice versa, as first demonstrated a considerable time ago by Sudler. This relationship, as Graham states, reasonably explains the frequent association of hepatitis with cholecystitis. Hepatitis is manifested to the surgeon by striations, dots, mottling of that part of the liver adjoining the gall bladder and at times transformation of the normally sharp edge of the liver to one of rounded contour. While hepatitis is not always thus grossly manifested, Graham has found microscopic evidence of its presence in pieces of liver tissue removed at the time of operation for gall bladder disease in almost every case examined. He thinks that the lymphatic connections between these two organs are made in the parenchyma of the liver, and that an infectious, vicious circle exists between the two. Wilkie, in 50 cases in which the cystic gland was examined bacteriologically, found streptococci in 86%, indicative of lymphatic extension.

The frequent association of infection of the gall bladder and appendix along with the presence of duodenal ulcer, while by some considered a part of the general infection in accordance with the theory of blood-borne infection, can well be inaugurated in any of the regions referred to, and conveyed by lymphatic extension from any one of the structures involved to each other and along the biliary tract. In a series recently reviewed the appendix had been previously removed in 13 cases of gall bladder disease coming to operation, and of these 6 appendices were acute. In the pathological check-up of 42 appendices removed at the time of the operation on the gall bladder, 27 were definitely chronic, 12 showing complete or some degree of obliteration. With one acute and one sub-acute, the evidence of diseased appendix was found in practically 70% of the 42 removed. Moynihan thinks that the appendix is often the source of gall bladder infection and in view of the frequency of cases of appendicitis, both acute and chronic, that are operated on, it is a likely supposition that many attacks occur that are unoperated but which act as foci of infection from which spread occurs by way of the lymphatics to the biliary tract. Larimore has recently given great support to this view. The frequency of gastro-intestinal infections should be mentioned also.

Particularly do we believe that the lymphatics carry infection to the pancreas, especially the head of pancreas. Pancreatic involvement in biliary tract disease is estimated at from 20% to 50%. The clinical evidence seems to be greatly in favor of extension from near organs, especially from the gall bladder, in this manner. Judd and Mann, Deaver, Sweet, and Graham are among many who support this theory, which is more than merely hypothetical. It has certainly fulfilled our needs more than any other theory, and we feel, despite some experimental evidence, namely that of Koudama, by no means as yet fully confirmed against this view that definite proof will eventually be produced of this rôle of lymphatics in the spread of infection, not alone to the pancreas, but along the entire biliary tract.

We have referred to the extensive anastomosis of the lymphatics of the liver and gall bladder. There is connection between these vessels with other lymphatics which course along the common duct to further come into relationship with lymphatics around the head of the pancreas. By injection experiments into the wall of the gall bladder, Graham and Peterman showed that the infected material not only followed along the lymphatics into the liver, but could be seen to pass along the lymphatics of the common duct and into the pancreas. Kaufman and others have not been able to confirm this, however. The fact that cancer of the gall bladder, comprising between 4 and 5% of all carcinomas, often metastasizes to the head of the pancreas, and the repeated association of involvement of the pancreatic head in diseases of the gall bladder are assertive clinical facts which, despite opposing views experimentally arrived at, cannot be ignored. It was our good fortune, a short time ago, to observe the gradual disappearance in size of a greatly enlarged pancreas. As felt through the abdominal wall the tumor mass in the epigastrium was thought to be cancer of

the stomach, but the presence of sugar in the urine, and the past history of treatment for diabetes, led to exploration. The gall bladder was a chronic, thickened one without stones. The pancreatic head and body were enlarged almost throughout their entire extent. Drainage of the gall bladder was done, and the tumor gradually disappeared. We cannot conceive how this could come about except through drainage by way of the lymphatics. To Graham's later work with Koudama, therefore, in which they found no evidence that lymphatics from the gall bladder enter into the pancreas, this single case is to us almost sufficient clinical proof that they in some way at least connect with, if they do not actually enter, the pancreas.

Just how this drainage acts it is difficult to explain, but it is probably accomplished by lymphatic flow opposite in direction to that which the lymph travels in conveying infection to the pancreas. Reversal or diversion of lymph flow is a well-known fact, especially in the peritoneal cavity. The operations of Handley and Kondoleon for oedema of the extremities are examples of lymphatic diversion. Horsley considers such diversion or reversal to be brought about because of a biological reaction to a foreign body, namely the drainage tube.

Without going into much detail, other theories dealing with the mode of pancreatic involvement, should be mentioned: (1) regurgitation of duodenal contents along the duct of Wirsung; and (2) conversion of the duct of Wirsung and the common duct into a continuous channel, permitting the entrance of infected, or chemically altered bile into the pancreas, with pancreatitis of varying degrees resulting. Archibald is one of the leading proponents of the second theory and thinks that such diversion is made by a stone, or inspissated mucus at the ampulla of Vater, or by spasm of the sphincter of Oddi. He has even advocated operative attack of the ampulla in certain cases. First of all it might be said that the sphincter of Oddi is seldom found to have any great degree of muscular development. Judd and Mann, after a study of 170 necropsied subjects, showed that anatomical conversion seemed possible in only 4½%. They concluded "there was only exceptionally a physiological arrangement, very exceptionally an anatomic arrangement, and in only a small number of cases was it a presumable occurrence." That undoubtedly such a conversion at times takes place is proven by clinical and post-mortem experience (Opie), but almost always the severer forms of pancreatitis result. For example Schneider and Sebening, in a review of 38 cases of acute pancreatitis, demonstrated 31 cases with stones, or 81%; 15, however, were in the common duct, and only 7 at the ampulla. Besides actual conversion by stone, they feel that common duct stones may excite spasm of the sphincter of Oddi, particularly stones in the supraduodenal portion of the duct. Again we state it to be our belief that the contractibility of this sphincter is greatly over-estimated.

In refutation of the first theory mentioned, as to involvement of the pancreas, we would cite the frequent sterility of bile even in known cases of cholecystitis, and as previously stated, the comparative innocuousness of duodenal contents. Archibald states that suppuration would be more common were extension to occur along the lymphatics, but we feel that, even allowing for the resistive powers of the pancreas to infection, it is more reasonable to think that suppuration would be more common because of direct contact of infection conveyed via the ducts, and further that involvement of the entire pancreas would be the rule rather than having it limited in the vast majority of cases to the pancreatic head.

To briefly recapitulate, it is difficult with our present knowledge to prove or disprove the rôle of the lymphatics, but the theory that infection carried by them is the most common cause of pancreatitis of the interstitial type seems reasonable on certain experimental grounds, for anatomical reasons, and especially because it now rests on a practical, clinical foundation. As Deaver says, "We must rely on the pathological and clinical deductions and testing ground of experience at the operating table."

Having considered the most plausible theories of infection, and some of the newer conceptions, we arrive at a consideration of how to conduct ourselves surgically in accordance with our present knowledge. First of all, the history maintains its extreme importance and value. In dyspepsias of any severe grade, in an otherwise quite normal individual past the age of thirty, the gall bladder is greatly to be suspected, but other causes of digestive disturbances should be ruled out by appropriate methods, the x-ray examination of the gastro-intestinal tract, and the cholecystographic examination of the gall bladder being our greatest aids.

After arriving at a diagnosis which is either proven, quite definite, or at least very presumable, the patient is prepared for operation. Many of these patients with gall bladder disease are quite obese and measures for reduction of weight should be instituted, slow reduction being preferable. Here should again be noted the importance of the function of the liver as a storehouse of glycogen and the frequent diminution of this substance because of the vomiting often attending disease of the biliary tract. The liver should be charged with glycogen preoperatively, and this is attained by the administration of glucose, by mouth if possible, by rectum, or directly into the circulation.

The coagulation time should always be determined, even though jaundice should not be present, for a damaged liver may go on forming bile-salts incapable of natural usage to maintain coagulability of the blood at or near normal levels. Calcium, by mouth, if possible, is

indicated, but more rapid, certain and better is the giving of calcium chloride in 1% solution intravenously. Our experience has been that the coagulation time is reduced and we have not had, during the past three years, since using this solution, any serious cases of hemorrhage. However, Zimmerman, in some recent work, found that elevation of calcium content of the blood by injection of parathormone had no constant effect on coagulation time in normal or icteric subjects.

The blood pressure should always be taken, particularly as an aid in the selection of the type of anesthesia. We have now an elective anesthetic for any class of patient. Most can take ether or gas-oxygen, but the use of local anesthesia or of spinal anesthesia will not infrequently be called for. During the past year we have been performing more and more operations on the biliary tract, using spinal anesthesia, with great success in rendering the operation more easy to do and in aiding the convalescence of the patient.

A word should be said here about the handling of the very acute case of cholecystitis with high temperature and considerable elevation of the blood count. In all but a small percentage of cases, generally those with empyema, refraining from immediate operation will result in no great amount of harm. The condition should be allowed to subside and supportive measures carried out for these extremely ill cases. We have no rules even approaching fixity as to when to operate, but are guided in the individual case by the degree of severity at onset, the reduction of the temperature curve and blood count, and the rapidity of clinical improvement. A week's rest in bed is none too long and longer periods, though not economical to be sure, are desirable. The mortality of this type will certainly be lower and the ease of operation very apt to be greater the longer operation is deferred, within reasonable limits.

With the patient on the table we almost invariably use the Bevan incision, because our experience has been that by doing so we obtain the best exposure of the field and where removal of the appendix is considered wise, or if it be desired to explore the stomach, this incision lends itself readily.

The abdomen being open, our diagnosis is immediately confirmed as follows: (1) inflammation of the gall bladder, more or less acute, or chronic thickening, with or without stones, and with or without involvement of the pancreas; (2) adhesions of the gall bladder to surrounding structures, which will give us evidence of past or present inflammation, or will indicate disturbance of function because of their attachments; (3) color change from slate blue to grey, etc.; (4) enlargement of Lund's gland at the junction of cystic and common ducts; (5) hepatitis (previously referred to); (7) the cholesterol plaques in so-called "strawberry gall bladder", which will, of course, only be seen if the gall bladder is opened.

The distention of a normal appearing gall bladder is not necessarily, and is even rarely, a manifestation by itself of abnormality. Nor is incompressibility. The gall bladder is distended during fasting, emptying itself to the stimulus of food in the duodenum, and most operative cases will be fasting.

As to the removal of normal looking gall bladders, when no pathology can be demonstrated to account for the digestive symptoms of the patient, we feel that it is haphazard surgery and if done too frequently will surgically commercialize the gall bladder, an accusation previously directed to the appendix. We would rather have some positive evidence, since we do not feel able even to approach an estimation of the disturbance in physiology which may result from the removal of a normal gall bladder, and certainly not a few normal in every respect will be removed.

If the condition of the gall bladder is acute, it will be simply a cholecystitis or a cholecystitis with stones. The general consensus is that an infected gall bladder should be removed for two reasons: first, because its function has been destroyed or impaired, with further impairment likely; and, secondly, in accordance with the theory of lymphatic extension it is a focus of infection. However removal cannot, nor should it, always be done. If the patient is aged, or a bad risk because of whatever state of affairs, it is safer to drain. If jaundice is present, we feel dogmatic in stating that drainage should practically always be done. A low mortality is first of all to be desired with as little morbidity as possible our secondary ambition. If there is marked infection along the entire biliary tract, as evidenced by oedema and swelling of the liver, plus marked congestion, oedema and thickness of the gall bladder and gall ducts, it is certainly better to drain. Not a few surgeons advocate removal of the thick, white, distended, oedematous, friable gall bladders, stating nevertheless that it requires thorough and accurate technique. But even in the hands of the best operators disaster will frequently ensue from removal or its attempt in such cases. Damage to the ducts will be much more common if this advice be followed.

Aside from objection on technical grounds, we feel that there is good reason, which is in keeping with the theory of lymphatic extension along the tract, for drainage of the gall bladder alone in such markedly inflamed conditions. Drainage, first of all, serves as a decompressor of the distended bile tract. This can, of course, at times be accomplished by drainage of the common duct, thus allowing for removal of the gall bladder, but with the condition of affairs outlined above the objection, because of difficulty in technique, still holds. Many say that the gall bladder, assumed to be the focus of infection in

such cases, should be removed, just as the tonsils or teeth are removed in the treatment of arthritic conditions, but when we meet with the pathology mentioned above, we cannot but feel that infection has spread to such an extent that removal of the gall bladder is the removal of only one focus, comparable to the removal of only one tonsil, or one tooth of several infected ones. All that is done is to reduce quantitatively the degree of infection and the infection in other structures of the biliary tract keeps up the assault on the liver and the body in general. The gall bladder should be made the point of convergence of infection, or of toxic agents from the biliary tract by drainage of its lumen.

For the less acute gall bladder, with or without stones, with infection confined principally to the gall bladder, with perhaps more or less hepatitis, cholecystectomy should be done. Here the conception of the gall bladder as a focus of infection, capable of extending along the lymphatics to other parts of the biliary tract, is our guide. Here the gall bladder is removed to forestall any such state of affairs as outlined above.

For the chronic gall bladder adherent to other structures cholecystectomy should be done after division, of course, of the adhesions, which mean past or present inflammation, or which are congenital. The function of the gall bladder is often destroyed or markedly interfered with by them.

For cholecystitis, with or without stones, with a low grade pancreatitis, the gall bladder is to be removed, because the gall bladder is most presumably the focus of infection for the pancreas. If the pancreatitis is more than mild, we think it wiser to drain the gall bladder.

With the stones in the common duct and a contracted functionless gall gladder, cholecystectomy with prolonged T-tube drainage of the common duct is indicated because the gall bladder is useless for further function. A thickened common duct should be explored for stones. Lahey recently has brought to our attention the fact that occasionally stones are found in common ducts which are but little thickened or not at all. Of course the common duct should always be carefully palpated, and occasionally exploration of the duct will be indicated. But we do not feel that promiscuous opening of the duct is to be advocated.

With stone in the common duct and a functioning gall bladder, if we are sure that all stones have been removed, cholecystectomy with common duct drainage is our choice. When there are complications, or if the infection is widespread along the whole biliary tract, cholecystostomy should be done.

Before closure of the abdomen the question of drainage following cholecystectomy arises. The objections to the insertion of a small drain, at least, have not been borne out by our experience. The certain need of a drain in some cases and the possible need of a drain in others has led us from the realm of speculation as to which case to drain, and which not, so that we use a drain in every case, either rubber tissue or cigarette. Mayo says, "A little drain is a comfort to the surgeon and a life-buoy to the patient." And Moynihan remarks that in the days of his "adventuresome youth" he closed without drainage.

The objections to drainage by those favoring so-called "ideal cholecystectomy" are that it conduces to secondary hemorrhage, prolongs the convalescence considerably, strongly predisposes to hernia, and that extensive adhesions are much more likely to form at the drainage site than otherwise. The first seems to us to be no objection at all, but, on the other hand, if there is hemorrhage, or bile leakage, we will know it sooner if a drain is present. Time is mighty important when we are dealing with more than moderate hemorrhage, and even bile leakage is not innocuous in every instance, although usually it is. We can have peritonitis from bile, whether sterile or not. Re-operation is not unusual because of leakage of bile and pressure on the ducts from escaped bile has been reported.

As far as the drain prolonging convalescence is concerned, no deductions can be drawn from our series. The time in the hospital, however, of our cases is only a day and a half more than found in reports of much larger series than ours.

Regarding disposition to hernia, such is not borne out by follow-up records. The small drain, as placed, runs up the gall bladder fossa out at the upper end of the wound, near the course of the round ligament, just beneath the rib margin; in fact, near the attachments of muscle where they are quite strong. At any rate we can minimize greatly any tendency to hernia by making a small incision lateral to the main one through which a small drain is led out.

As to the formation of adhesions following the placing of a small drain, we feel that it is an exaggeration to say that they are much more likely to form. Adhesions, as we know, will follow operations in so-called clean abdominal cases. Further, if hemorrhage occurs, or if there has been bile leakage, or if, as has been shown to happen, the ligature slips from the cystic duct or the cystic duct and artery when tied together, the stage will be better set for the development of adhesions than if we had resorted to drainage.

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MYOMECTOMY DURING PREGNANCY. REPORT OF CASE

BY LOUIS E. PHANEUF, M.D.*

HISTORY:—

Mrs. L. E., a primigravida, aged 31, was admitted to the Carney Hospital on the thirtieth of April, 1929. She complained of having had, for the previous twenty-four hours, severe pelvic pain, cramp-like in character and increasing in severity; it was sharp, but did not radiate. She had vomited once, the vomitus consisting of the material she had had for dinner. The patient was pregnant. There were no chronic diseases in the family; she herself had had measles in childhood, but otherwise had always been well. Menstruation was established at the age of 15; it had been regular, of the twenty-eight day type, lasting three to four days, without pain, although there was considerable flow. The last menstruation had occurred on January 15, 1929, making her confinement expected about October 22, 1929. She had been married seven months, this being her first pregnancy. Since the beginning of pregnancy there had been no symptoms from the genito-urinary tract and none from the gastro-intestinal tract except constipation. Her weight was 120 pounds, which was about normal for her.

The physical findings were negative except those disclosed by abdominal examination. This showed a uterus which rose to the level of the umbilicus; it was firm and very tender to palpation.

Vaginal examination revealed a small vulvo-vaginal cyst on the left side, and a moderate amount of mucoid vaginal discharge. Myomata were felt in the anterior wall of the uterus and marked tenderness was elicited on bi-manual examination. Because of the persistent pain the patient was prepared for operation, which was performed on May 6, 1929.

Diagnosis—Multiple myomata uteri. Pregnancy.

Operation—Myomectomy. Spinal anesthesia.

Median abdominal incision about six inches long, entering the peritoneal cavity between the bellies of the recti muscles. A pregnant uterus was easily turned out. Four myomata were found on the anterior surface of the uterus. The largest one was approximately 10 by 6 cm. and the others 8 by 5 cm. These were removed. Closure of the incisions in the uterus was accomplished with some difficulty with interrupted sutures of No. 2 chromic catgut. The tissues were very friable. The largest myoma, after its removal, exposed the mucosa of the uterus, through which the membranes could be seen pouting. The membranes were not ruptured, however, in closing this incision. The uterus was returned to the abdominal cavity. The abdominal incision was closed in four layers.

Convalescence:—

For the first twenty-four hours the patient was given proctoclysis consisting of eight ounces of five per cent. glucose in saline solution every six hours, and, in order to facilitate the expulsion of flatus, four doses of eserine sulphate, grains 1/50, at four hour intervals. Morphine sulphate in doses of 1/6 grain was prescribed every four hours for the first three days. One injection of morphine sulphate, grains 1/6, and scopolamine hydrobromide, grains 1/150, was administered before operation. The temperature and respirations were normal; the pulse varied between 80 and 120 for the three days following operation. For sleeplessness an allonal tablet was given at night. She was allowed to sit up in bed on the tenth post-operative day and in a chair on the twelfth day. The laboratory findings were negative. The histological report was "Leiomyomata." She remained in the hospital twenty-one days and was discharged on May 22, 1929, in excellent condition.

The patient was then seen at the pre-natal clinic every two weeks during her pregnancy, which evolved normally. She reached term and was sent to the hospital on October 20, 1929. A cesarean section was decided upon because of the disproportion between the fetal head and the pelvis, and because of the fact that there were four scars in the anterior wall of the uterus. Under ether anesthesia, on October 21, 1929, the previous scar was resected and the abdominal cavity entered between the bellies of the recti muscles. On opening the peritoneal cavity it was found that a loop of ileum was adherent to the uterus at the site of the longest of the uterine scars. The loop was kinked; it was separated from the uterus, leaving on it some of the uterine peritoneum. The incisions in the uterus seemed to be very well healed. The bladder was separated and a transverse incision made in the cervix. A female child, weighing seven pounds, seven and one-quarter ounces, was delivered by the vertex. The placenta and membranes were extracted through the incision. The cervix was dilated from above as the patient did not have any labor; 1 cc. of pituitary extract and 1 cc. of gynergen were injected in the thigh muscles. The cervical incision was closed in two layers with No.2 chromic catgut, the first interrupted and the second continuous. The bladder was sutured back on the uterus in such a way as to cover the cervical incision completely and make it entirely retro-vesical. The abdominal incision was closed in three layers. The uterus contracted well. The patient remained in the hospital for sixteen days, having had the cesarean section performed on the second day after entrance. The highest temperature was 100.5; the pulse varied between 90 and 120; the respirations were normal. On the third day the temperature, pulse and respirations became normal. The patient made an uneventful recovery; there were no complications of any kind and she was discharged well with her baby on November 4, 1929.

Examination one month later revealed a well involuted uterus in forward position, freely movable; normal adnexa; there were no masses or areas of tenderness in the pelvis.

SUMMARY AND COMMENT

Myomectomy during pregnancy is usually practiced for pain, aseptic necrosis, compression of the bladder and rectum, torsion of the pedicle, for incarceration in front of the presenting part and for the incarcerated retroversion of a myomatous uterus. In this case it was done for severe and persistent pain.

The interesting features here were: *first*, exposure of the amniotic sac for an area about 5 cm. in diameter in removing one of the myomata; despite this, the pregnancy went to full term. *Secondly*, a cesarean section was chosen because of the existing disproportion between the maternal pelvis and the fetal head. A rectal examination made before delivery showed that the head could not be made to enter the pelvis by making forceful pressure on the fundus and that the fetal head was over-riding the symphysis pubis. During the laparotomy it was

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discovered that a loop of ileum was adherent to a median uterine scar; this so kinked the ileum I am convinced that during the process of involution the intestine would have been pulled in the pelvis and obstruction would have resulted.

One would expect considerable activity of the uterine muscle following the trauma involved in the enucleation of four myomata from a pregnant uterus. Spinal anesthesia may have been a helpful factor in preventing this activity. There is practically no vomiting and intestinal gaseous distention following laparotomies performed under this form of anesthesia and this, no doubt, also played a part in preventing the premature evacuation of the uterus.

ESSENTIAL HEMATURIA: THE PATHOLOGY OF THE RENAL PELVIS IN FIVE CASES*

BY BANCROFT C. WHEELER, M.D.†

THE diagnosis of essential hematuria has to be made entirely by a process of exclusion. Before it is justified, a careful cystoscopic examination must have demonstrated bloody urine coming from one or both kidneys the function tests of which are normal and pyelograms negative, in other words, in which no other sign of abnormality can be found. With the increasing accuracy of urological diagnosis, the number of such cases has steadily diminished, and it is the opinion of some medical men that this process will continue until the term falls entirely into disuse. They believe that the bleeding is actually the early manifestation of some such disease as nephritis, non-opaque calculus, malignant tumor, or infection, which is not sufficiently advanced to be detected and that the use of the term "essential hematuria" is misleading if not dangerous. Evidence to the contrary, however, is to be had from two sources.

First, many cases of essential hematuria have been followed over a period of years without showing further signs of serious disease. Bumpus[1] has reviewed a series of 155 from the Mayo Clinic, five to twenty years after the original diagnosis had been made. Of these only six reported the appearance of any definite renal disease; three had developed calculi and the other three had had nephrectomies done elsewhere for unknown reasons but presumably on account of persistent bleeding. Levy[2] investigated 30 cases at periods varying from a month to thirteen years following their discharge from the Johns Hopkins Hospital and Brady Urological Clinic, and although some of them suffered recurrences of bleeding, none gave signs of having developed any further kidney damage.

A second indication that essential hematuria is not to be considered an early evidence of some serious disease lies in the increasing number of pathological studies which have been made of kidneys removed at operation in cases where the bleeding persisted to such an extent that nephrectomy became necessary or in cases operated upon under the mistaken diagnosis of tumor, tuberculosis, etc. There is great variety in the findings reported under these circumstances and occasionally nothing abnormal has been discovered. The important thing to note in this connection, however, is that examinations have been made of many such specimens, in which no sign of serious disease has been found. Scheele and Klose[3], in 1925, collected 300 cases from the literature in which pathological examinations of such kidneys had been made, but the great majority of these consisted of biopsy material from the cortex and resulted in a strong emphasis on the finding of localized areas of round cell infiltration, the so-called "focal nephritis," to which the bleeding was largely ascribed. As the number of cases where it has been possible to examine the whole kidney has increased, greater stress has been laid on the finding of changes in the region of the pelvis, which account more satisfactorily for the bleeding. Altogether, then, sufficient pathological material has been studied to make it possible to say that in a large number of cases where there has been known to be bleeding, there was no evidence of early serious kidney disease. On the other hand, one cannot say that the bleeding was invariably due to any one pathological condition, but rather to a variety of such conditions.

The term "essential haematuria" should not, I believe, properly be applied to bleeding due to Bright's disease or hypertension, nor to its occurrence in the course of blood diseases such as purpura, hemophilia, and leukemia, where such diseases can be shown to exist.

With these limitations and with the understanding that the diagnosis is made only by the exclusion of other causes of bleeding, it might be supposed that the number of instances seen by any one observer would be small. Most urologists agree, however, that this is not so. Braasch[4] states, "The two most common renal lesions" that cause bleeding "are neoplasm and essential hematuria." In looking over the records of the Massachusetts General Hospital in the six years 1923-1928 inclusive, in which there were 42,165 admissions, I found 12 cases in which, after thorough investigation, the diag-

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nosis was justified. None of these were operated on; but two others, diagnosed as "idiopathic hematuria", after negative findings on the first admission, returned two and four years later with calculi. At the Peter Bent Brigham Hospital, during the same six-year period, out of 27,387 admissions there were fourteen cases of essential hematuria, in five of which nephrectomies were performed. I shall present briefly the histories of these five together with the pathological findings. One of them has been reported previously.[6]

FIG. 1, Case 1. Round cell infiltration of the pelvic fat.

CASE 1. (S-18022) M. D., a married woman of 60, entered the hospital December 3, 1922, complaining of hematuria, dysuria, and frequency. Her family history and past history were negative except that her mother had died of pulmonary tuberculosis. The present illness began about a year before admission, when she noticed for a few days slight burning on micturition. She was then well for eight months, when she had an attack of sharp pain starting in the left flank and radiating around to the left lower abdomen and genitalia. This lasted for only a few hours, but some weeks later she had another entirely similar attack. There was dull aching pain in the region, between and after the periods of sharp colic. About two months before entry she began to have frequency, nocturia, and dysuria, and two weeks later hematuria. In the interim the bleeding had become somewhat worse, but the other bladder symptoms remained about the same. She had lost no weight, but some strength, and was more easily fatigued than previously.

Physical examination was negative. The blood pressure was 130/70. Neither kidney could be felt and there was no costovertebral tenderness. The urine was grossly bloody. A culture from it showed no growth. Her temperature was normal. R. B. C. 3,800,000; W. B. C. 7,300; Hg. 80%. Smear—moderate achromia; otherwise normal. Coagulation time, 16 minutes. Bleeding time 1¼ minutes. Blood urea nitrogen 11 mgs. per 100 cc.

Six cystoscopic examinations showed each time a normal bladder, and at five of them blood was clearly seen coming from the left ureteral orifice. The urine from the right kidney was essentially negative, while that from the left contained many red blood cells. No tubercle bacilli were found. Her divided phthalein test showed an excretion from the right side of 10%, and from the left 7%, in 15 minutes.

During her stay of two weeks in the hospital she

continued to bleed quite markedly. Two lavages of the left kidney pelvis with 2% silver nitrate had no effect upon the haematuria. Exploratory operation was advised, but she went home for two weeks to spend Christmas. On readmission the urine was still bloody and at another cystoscopy the same findings were observed.

At operation by Dr. W. C. Quinby, the left kidney was exposed through an incision in the left flank and carefully examined. No gross abnormalities were noted. However, on account of the persistent bleeding it was removed and the wound closed without drainage. The patient had an uneventful convalescence and was discharged on the eighteenth postoperative day.

Examined pathologically by Dr. S. B. Wolbach, the kidney seemed entirely normal except for "an opaque appearance in the fat outside the pelvis in the region of the middle calyx." On section this did not appear to extend into the kidney substance. Microscopically, the cortex was normal. "Sections going through the apices of the pyramids show very marked injection of the blood vessels, with small hemorrhages into the interstitial tissue." "There is extensive fibrosis and chronic inflammatory reaction in the pelvic fat. The fat cells are evidently undergoing decomposition with a resulting variation of body reaction, due to fat crystals. This has given rise to clusters of mononuclear phagocytes and occasional giant cells simulating small tubercles. (Fig. 1.) There is very marked secondary fibrillary reaction throughout the fat tissue and the usual infiltration with lymphoid and plasma cells.—It is not possible to associate this lesion with any antecedent process, as blood vessels, large and small, seem to be normal. There is no evidence of hemorrhage in such locations. Immediately beneath the pelvic epithelium there are very heavy collections of lymphoid and plasma cells, and in one of these a lymphoid follicle with a germinal center has formed. The epithelium itself appears intact." The pathological diagnosis was "chronic inflammation of renal and pelvic fat."

CASE 2. (S-18356) D. P. J., a colored man of 48, entered the hospital on March 1, 1923, complaining of indigestion and hematuria. The family history was negative. The past history contained a story of epigastric distress for which he had been treated in the Out-Door Department without much relief. He had had a disease which he thought was malaria, thirty years before, and two gonorrheal infections.

The hematuria for which primarily he was sent into the hospital was found on routine examination in the Out-Door Department. He had had no urinary symptoms except nocturia once for a year and a half.

Physical examination was entirely negative save for a reduplicated cardiac second sound. His temperature, pulse, and respirations were normal. The urine was loaded with red blood cells. A two-hour phthalein test showed 50% function. The white blood count was 5,800 and hemoglobin 85%. Blood Wassermann was negative.

On cystoscopic examination blood was seen coming from the left ureteral orifice and clear urine from the right. A pyelogram on the right side was normal, while that on the left showed a small pelvis with long, thin, pressed-out calices. The diagnosis of left hypernephroma was made.

At operation by Dr. Quinby, the left kidney was exposed through a transverse incision in the loin and "found to be free from adhesions, of normal size, shape and consistency. In view, however, of the very definite abnormality seen in the pyelogram it was considered without doubt involved by a neoplasm." It was therefore, removed and the wound closed without drainage. The patient had an uneventful convalescence and was discharged on the twelfth postoperative day.

Examination of the kidney in the gross was negative except for a slight increase of pelvic fat.

Microscopically, the cortex showed no important lesion. There were a few sclerosed glomeruli and changes attributable to slight arteriosclerosis. Near the apices of the pyramids there were many small hemorrhages, with an associated cellular reaction and scattered hemosiderin pigment. The wall of the pelvis showed a marked infiltration with lymphocytes (Fig. 2) and also considerable extravasation

FIG. 2, Case 2. Round cell infiltration of the wall of the pelvis at some distance beneath the epithelium.

of blood into the connective tissue beneath the mucosa. There were areas of lymphocytic invasion in the pelvic fat, with the additional feature of actual hemorrhage and phagocytosis of hemosiderin and red blood cells. This reaction, however, was not immediately beneath the pelvic epithelium, and the blood could apparently have had easiest access to the urine by entering the tubules in the region of the apices of the pyramids.

CASE 3. (S-28481) M. W. B., a widow of 75, entered the hospital on March 26, 1927, complaining of hematuria and pain in the right flank. Her family and past history were negative. The present illness dated from only five days before admission, when she first noticed blood in her urine, associated with some frequency. These symptoms persisted for twelve hours, then ceased, but returned two days later, the bleeding becoming more pronounced, with the passage of clots, and continuing till she entered the hospital. On the morning of admission she had two very severe attacks of colicky pain starting in the right iliac fossa and radiating to the genitalia.

Physical examination was negative in general except for slight enlargement of the heart to the left with a systolic murmur heard over the whole precordium. The blood pressure was 120/55. Neither kidney was felt. Her temperature was 98.6°; pulse 82; respirations 20. The urine was grossly bloody. A two-hour phthalein test showed an excretion of 30%. R. B. C. was 5,800,000; W. B. C. 9,100; hemoglobin 75%; blood urea nitrogen 15 mgs. per 100 cc.

Cystoscopy showed a normal bladder. Thick blood was seen to come from the right ureteral orifice and clear urine from the left. A right pyelogram gave a suggestion of dilatation of the pelvis and slight blunting of the calices.

Operation was considered justified because of the marked bleeding and was performed by Dr. F. C. Newton. The right kidney was exposed through an incision in the loin and freed. It did not appear abnormal externally. Nephrectomy was performed uneventfully, and the wound closed without drainage.

The patient had a satisfactory convalescence and was discharged on the thirteenth day.

Examined grossly, the kidney looked normal, and on section there were no signs of inflammatory or arteriosclerotic changes on the cut surface. A slight increase in the amount of pelvic fat was noted.

Microscopically, there was a moderate degree of arteriosclerosis throughout, with slight cortical scarring and an occasional small area of lymphocytic infiltration in the cortex. There were also a few min-

FIG. 3, Case 3. Hemorrhage free in the tissues beneath the pelvic epithelium.

ute hemorrhages between the tubules in the pyramids. Most of the changes, however, were found in the region of the tips of the calices. The stroma under the pelvic epithelium was full of eosinophiles, lymphocytes, and neutrophiles, and there was a considerable amount of extravasated blood intermingled. (Figs. 3 and 4.) The capillaries in this region were dilated. No deficiency of the epithelium itself could be demonstrated, however.

From the striking similarity between the changes noted beneath the pelvic epithelium here and those in the other cases it seems more than probable that her bleeding was coming from this source rather than from the arteriosclerotic areas in the cortex.

The pathological diagnosis was "petechial hemorrhages of the kidney substance; pyelitis."

CASE 4. (S-29973) (Previously reported) F. S., a Jewish woman of 22, entered the hospital on October 14, 1927, complaining of painless hematuria. The family and past histories were negative. She had first noticed blood in the urine two years previously. Shortly afterward she went to the Massachusetts General Hospital, where on cystoscopic examination blood was seen to be coming from the right ureteral orifice. A pyelogram on the right showed an apparently normal pelvis. She was advised to have an operation at this time but refused. She bled intermittently, but more of the time than not, during the next two years, the longest period of freedom from bleeding being about three weeks. At times there were moderate sized clots in the urine, but never any frequency, pain or dysuria. During the three months preceding entry to this hospital she had noticed loss of strength, dyspnea on exertion and increasing pallor. She had been on a liver diet during the latter part of the time.

On admission she was seen to be markedly pale, and the skin was yellowish. Neither kidney could be felt and there was no abdominal tenderness. The temperature and pulse were normal. The urine was grossly bloody. The red blood count was 1,670,000; hemoglobin 35%; blood pressure 105/65. Her two-

hour phthalein excretion was 60%, and the blood urea nitrogen 12 mgs.

Cystoscopic examination, a week after admission, showed a normal bladder. Bloody urine was seen to come from the right ureteral orifice and clear jets from the left. Catheters passed readily the full distance up both ureters and the specimens confirmed the finding of blood from the right. The urine from the left side was clear, and negative microscopically.

X-ray plates showed no shadows which could be interpreted as calculi. A pyelogram on the right showed a pelvis normal in size and outline, but containing a vague negative shadow about 1 cm. in diameter. This was thought to be possibly an intrapelvic papilloma or a blood clot. Operation was decided upon because of the marked anemia and the hemorrhages. The pelvis was normal throughout except for one papilla. The tip of this, about the size of the head of a black pin, consisted of a raised, granular, reddish material, from which blood oozed on pressure above. All the other papillae were normal.

Microscopically, again the abnormal findings were practically limited to the region of this one papilla. Dilated, thin-walled capillaries and veins were present in large numbers close beneath the pelvic epithelium at the tip of the pyramid and there were numerous extravasations of blood cells into the submucosa and peri-pelvic fat. In some places there was absence of the endothelium of the capillaries, and in one spot rupture of the pelvic epithelium. (Fig. 5.) With the blood there was also a considerable chronic

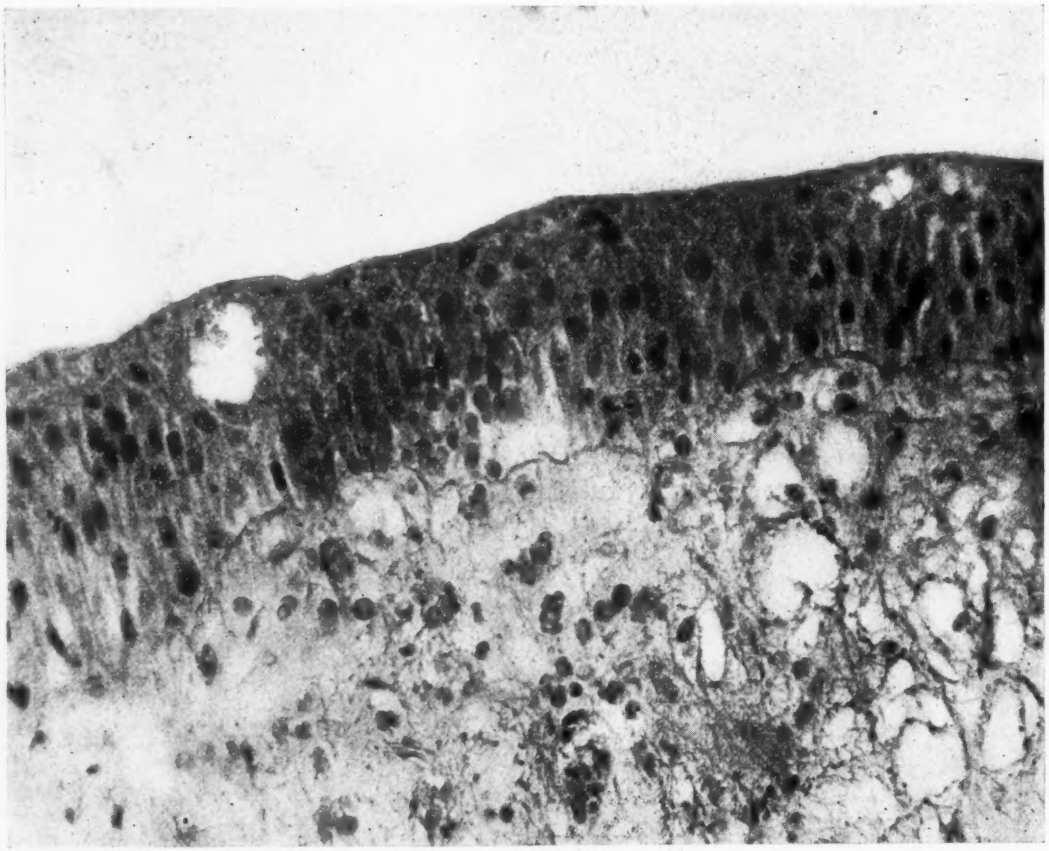

FIG. 4, Case 3. Extravasated red blood cells in the wall of the pelvis, some of which are shown penetrating the epithelium by diapedesis.

fact that the bleeding had been from the same kidney two years before.

At operation, after a transfusion of 500 cc., the right kidney was exposed and found to be freely movable. It presented no gross evidence of abnormality. The pelvis was opened posteriorly and a non-adherent blood clot about 1 cm. in diameter removed. The inside of the pelvis was then irrigated with saline solution and a steady blood-stained return obtained. Through a large V incision, however, no source for the bleeding was found, the epithelium appearing everywhere normal. The kidney was removed because of the history of persistent hematuria.

The patient made an uneventful convalescence and there were no red cells present in a catheter specimen of urine on discharge.

Examined grossly, the kidney was not abnormal in appearance except for its pallor. On section, the architecture was clear, and there were no cortical inflammatory infiltration with round cells, particularly into the fat. This was present, to a less extent, in a section through the adjacent papilla.

CASE 5. (S-30181) J. N., a man of 39, entered the hospital November 27, 1927, complaining of painless hematuria. His family and past history was negative except that he had had a chancre 10 years previously. The present illness had begun 4 years before admission, when he had had painless hematuria for a month and a half steadily. Cystoscopic studies done elsewhere at this time were said to have been negative. The present attack of bleeding was his second and had begun two and a half months before admission and continued steadily, but with varying severity since.

Physical examination was essentially negative. Blood pressure was 124/80. R. B. C. 5,200,000; W. B. C. 10,600; Hg. 90%; Wass. + +; B. U. N. 12 mg. per 100 cc.

Cystoscopy showed blood coming from the left ureteral orifice and clear urine from the right. Cultures from both sides were negative. Pyelograms showed a slight but definite filling defect in the middle calyx of the left kidney, which was constant in two films. The pelvis was washed out with 2% silver nitrate without affecting the bleeding.

Operation was then decided upon because of the continued bleeding and the pyelogram, which suggested a tumor of the kidney pelvis. A nephrectomy was done, the kidney appearing grossly normal at the time.

Examined pathologically the kidney was negative in the gross except that on section there was noted hemorrhage into the tissues immediately beneath the pelvis and into the peri-pelvic fat. The papillae were grossly normal. Under the microscope the cortex was found to be essentially negative. In the fat about the papillae were localized areas heavily infiltrated with mononuclear cells, chiefly lymphocytes. Hemorrhage had also occurred into the fat in the form partly of well-preserved red blood cells and partly of hemosiderin, the latter indicating a process of some duration. (Fig. 6.)

FIG. 5. Case 4. The capillaries near the surface are markedly engorged. One has ruptured through the pelvic epithelium and another is apparently about to do so. Hückel[24] has recently reported a case with very similar microscopic findings.

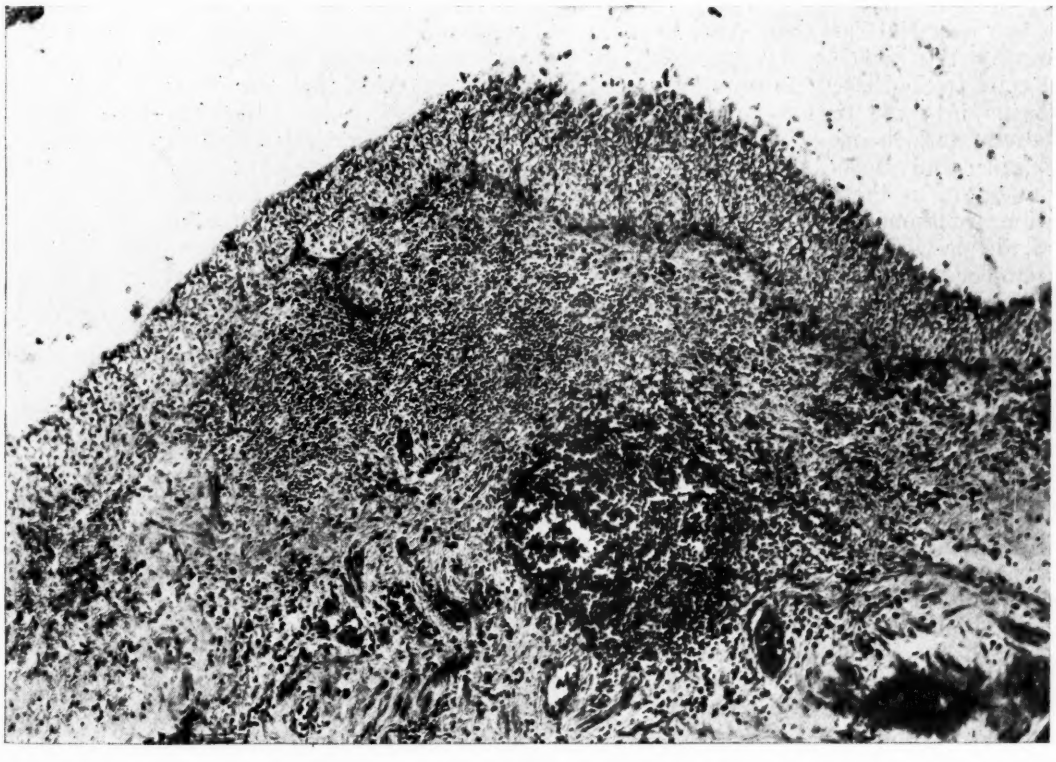

FIG. 6, Case 5. Low power. Immediately beneath the pelvic epithelium is an extensive hemorrhage, while further from the surface is a collection of lymphoid cells almost resembling a germinal follicle.

It will be noted that in all these cases the lesions described, though varying in nature, were located very near to the kidney pelvis. Mention has been made of the fact that many observers have reported finding areas of focal nephritis scattered through the cortex of bleeding kidneys, from which sections were taken at or after operation. One of the above cases had evidences of nephritis in addition to the pelvic lesions. It is to be expected that nephritis in varying degrees will frequently be found in association with essential hematuria but not as the cause of bleeding. Braasch[5] is of the opinion that the disease is never of nephritic origin and does not believe that collections of round cells in the cortex can give rise to hematuria.

It is undeniably more difficult to ascribe the presence of large amounts of blood in the urine to scattered foci of nephritis in the cortex than to such a pathological picture in the immediate vicinity of the pelvis as the last case showed. And as additional cases are reported in which the whole kidney is available for careful study, the proportion in which the pelvis is obviously the site of the bleeding is gradually increasing.

A more perplexing problem presents itself when one searches for an explanation for such lesions as those above described. There appear to be two essential features—first, hemorrhage, apparently representing extravasation of red blood cells from dilated, thin-walled capillaries and veins into the tissues beneath the pelvic epithelium, and, thence presumably through the epithelium; and secondly, a chronic inflammatory reaction, in the form of a round cell infiltration, sometimes with destruction and fibrosis, in the pelvic fat. The increase in the size and number of vessels has been so marked in some cases as to give rise to the designation of "angioma or capillary naevus of a renal papilla" (Fenwick[7]). Various names have been given to the condition according to the relative prominence of the vascular dilatation or chronic inflammatory factors. The term "varix papillae" was first used by Cabot[8] in 1909 and a number of cases have been reported since under this title (Pilcher[9], Whitney[17]). The characteristic vascular congestion has been ascribed to a variety of factors. Pressure on the renal vein as the result of ptosis (Newman)[10] or torsion (Spitzer[11]) of the kidney, or from external causes (Scheele and Klose[3]) has been given as a frequent source. Young[12] considers it a concomitant phase of early nephritis. Others, (among them Legueu[13]) believe that there is a vaso-motor paralysis with resulting dilatation of the vessels. An ingenious explanation is offered by Muschat and Randall[14], who suggest that the congestion is due to the spasm of a circular muscle at the base of the papilla (previously described by German anatomists, Henle[15] and Habler[16]), producing engorgement and varicosity of the veins beyond.

The presence of the inflammatory element in addition is recognized in such terms as "papillitis," "hemorrhagic pyelitis," and "pyelitis nodularis," which are more commonly employed (Krohn[18], McGowan[19], Rumpel[20]). A hypothesis which involves both elements is put forward by Rathbun[21], who holds that the bleeding is due to "chronic passive congestion resulting from scar formation from pyelonephritis, cortical abscesses which have healed, or infarcts produced by remote foci of infection. The scar tissue contraction impedes the circulation through the smaller vessels and causes varicosity and rupture, or the vessels rupture as a result of degenerative changes due to the impaired circulation." This theory is closely paralleled by that of Payne and McNider[22], who maintain that "the hemorrhage is due to chronic inflammatory changes . . . in the medulla and pyramids resulting in an obstruction to the venous return and subsequent hemorrhage by diapedesis or actual rupture of the capillaries." Their cases closely resembled those reported here except in the location of the inflammatory lesions, which, with them, were entirely at the base of the pyramids rather than in the vicinity of the pelvis.

Inasmuch as the chronic inflammatory element is present in so many instances, it seems reasonable to try to find some local injurious agent which may be at once the object of leukocytic invasion and the cause of injury to the blood-vessel walls. Bacteria have never been reported in such lesions, and cultures of the urine have been almost uniformly negative. Quinby[23], after very careful study of two similar cases in a search for the causative agent, concludes, "It is thus seen that although the cause for this condition is not clear, the location of the hemorrhage just under the epithelium of the pelvis and to a less extent in the substance of the papilla itself makes a definite and clear-cut picture. Whether the condition has been caused by soluble toxins which have chosen these areas of the kidney as their point of elective action or whether it is due to infection by bacteria is not to be determined." There has been no satisfactory further evidence on this point in the ten years since his statement.

Of interest in this connection is the observation that essential hematuria occasionally develops in very close association with the appearance of a focus of infection elsewhere in the body. In one of the Brigham cases bleeding first occurred shortly after a series of tooth abscesses and continued at intervals until the offending teeth were removed, after which it stopped. Levy[2] reports an almost identical case. A similar association with infected tonsils has been noted.

In regard to the treatment of the condition, it is to be considered that the bleeding characteristically occurs in short, intermittent spells and that these may recur at intervals over a considerable period. Pelvic lavage with some

caustic solution such as 2% silver nitrate frequently inhibits the hemorrhage, particularly, one might suppose, where the lesions as here are readily accessible to the drug. Operation is not often necessary and instances have been reported in which, following removal of one kidney, bleeding recurred from the other; but where there has been dangerous loss of blood, nephrectomy should be performed. In three of the cases reported here, as was noted, the chief indication for operation was a strong suspicion of malignant disease gathered from the pyelograms. Nephrotomy and decapsulation are of no proved value. In view of possible association with distant foci of infection, these should be searched for and removed if necessary.

It has been the purpose of this communication, first, to recapitulate the evidence that essential hematuria is not the early manifestation of an impending disease, but is caused by a local lesion in the kidney; and second, to report five cases of the disease in which certain patho logical changes were present in the pelvis.

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THE USE OF NON-SPECIFIC PROTEIN THERAPY IN GENERAL PRACTICE*

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THE multiplicity and diversity of conditions for which non-specific protein therapy has hitherto been employed with greater or less benefit has earned for it a well-deserved place in the realm of medical therapeutics. Stimulated by Wagner-Jauregg's use of malaria in the treatment of general paresis in 1917, the clinical application of this therapeutic agent has invaded practically every specialty and all fields of medicine. In his exhaustive treatise on non-specific protein therapy J. L. Miller[1] lists about a dozen acute and chronic conditions, including acute and chronic arthritis, pneumonia, typhoid fever, sepsis, erysipelas, gonorrhea, peptic ulcer, bacillary dysentery, encephalitis, general paresis, and certain dermatological and ophthalmological diseases in which he or other clinical workers have used this method with considerable success. Several other clinicians, especially Brown[2], and Allen and Smithwick[3], have since reported on the beneficial use of protein therapy in peripheral vascular disease, such as thrombo-angiitis obliterans, arteriosclerotic gangrene, Raynaud's disease, etc. The German clinicians, who have termed this therapeutic agent "protein shock", claim satisfactory results with its use in an even greater and more inclusive list of medical diseases (certain children diseases, asthma, obstetrical and gynecological conditions, etc.)[4]. Recently Kolischer[5] suggested the employment of protein shock in the treatment of nephritis, and still more recently its use in all cases of syphilis (primary stage, secondary stage, latent, Wassermann fast cases and neurosyphilis) was discussed by Kemp and Stokes[6]. In this paper, however, we shall discuss the use of non-specific protein therapy only in the more common chronic conditions such as the general practitioner meets with every day, and in which we have had the opportunity to employ this form of treatment during the last two or three years.

Of the thirty-four cases that we have treated in this manner there were thirteen cases of chronic arthritis; seven cases of thrombo-angiitis obliterans; three cases of Raynaud's disease; four cases of chronic encephalitis; four cases of peptic ulcer; two cases of general paresis and one case of tabes dorsalis. The cases were not selected, except that the treatment was not employed where a definite contraindication existed. We realize that, because of the small number

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of cases treated and the short interval since treatment, no definite conclusions can be drawn from the results obtained. Our purpose in presenting this series of cases is to point out the usefulness, ease of administration and applicability of non-specific protein therapy in the treatment of these several types of chronic conditions.

THE NATURE OF ACTION OF FOREIGN PROTEINS

Although numerous theories have been propounded to explain the physiological nature of action of foreign proteins, its true mode of action has not as yet been determined. The most widely discussed theories are (a) the thermal theory, (b) the anaphylactic theory, (c) the theory of modified vascular permeability, (d) the theory of increased lymph flow and (e) the theory of cellular stimulation. According to the last mentioned theory the foreign protein causes a mobilization of preformed specific and non-specific antibodies.

Non-specific protein therapy seems to be most effective in diseases of infectious origin. The action of foreign proteins on this large group of diseases is evidenced clinically by a general bodily reaction, the most marked feature of which is a rise in temperature. Within from one to three hours following the administration of an adequate dose of a foreign protein (such as typhoid vaccine intravenously), a chill sets in which may be very marked, and which is at times accompanied by general malaise, coldness of extremities, and occasionally cyanosis. The chill is soon followed by an elevation in temperature (102-106 F), which reaches its maximum in from two to four hours after the injection of the protein. Profuse sweating usually follows, bringing the temperature down to its normal level. A leucocytosis and a hyperglycemia without glycosuria have been observed by several clinicians following the reaction.

TECHNIQUE AND SUBSTANCES USED IN NON-SPECIFIC PROTEIN THERAPY

The list of agents employed in protein therapy as compiled by Miller[1] includes bacterial vaccines, tuberculin, normal blood serum, whole blood, milk, casein, peptones, gelatin, malaria and relapsing fever. Rat bite fever (Sodoku) has since been used by Solomon and others[7] in the treatment of general paresis. Since the main object is to produce an artificial and controllable pyrexia, the substance employed seems to matter little. The ophthalmologists claim better results with milk injections than with any of the other substances mentioned above. Where a long series of intermittent fever reactions is desirable, as for instance in the treatment of general paresis, it is most practical to use relapsing fever, rat bite fever or malarial injections.

The substance most widely used at the present time is typhoid vaccine, and we employ it in all our cases in such dilutions that one c.c. contains 125 million organisms. The usual asepsis of intravenous therapy is observed, and care is taken that the vaccine is injected into the vein and not into the surrounding tissue; otherwise no reaction takes place. An initial dose of about 50 million organisms is injected. The subsequent doses are usually larger but generally depend on the severity of the reaction caused by the initial dose. The usual dosages are from one hundred million to three hundred million, once to four times a week. (In one of our cases repeated injections of two and one-half billion bacteria failed to produce a reaction.) A fifty per cent. increase in each successive dose usually gives a reaction similar in intensity to the preceding injection. The number of injections depends on the condition treated, its severity and chronicity, and the individual responsiveness of the patient. The average course of treatment consists of from three to fifteen injections, but very often it is necessary to repeat the course two or more times. Following the administration of the protein the patient is given special nursing care, and temperature readings at hour intervals are taken until the reaction has entirely subsided.

DANGERS AND COMPLICATIONS OF PROTEIN THERAPY

Although the dangers and complications of non-specific protein therapy are few in number, nevertheless this treatment should not be used in patients affected with advanced heart disease, extreme arteriosclerosis, exhaustive diseases (such as tuberculosis, carcinoma, etc.) and alcoholism. The shock accompanying the usual reaction may be very harmful or even fatal to these patients. Two cases of thrombosis of peripheral arteries following the intravenous administration of typhoid vaccine in the treatment of peripheral vascular disease in patients with advanced arteriosclerosis have been reported[8]. One of our arthritic patients, who gave a history of having had malaria about fifteen years ago, following the initial injection began to run a chill and high fever on alternate days, which was finally checked with quinine. Reactions too severe in nature should be avoided and all patients should be watched for anaphylactic reactions, although this complication fortunately is rarely met with in the treatment with typhoid vaccine. Diabetes, if under control, is no contraindication.

CHRONIC ARTHRITIS

When a patient affected with chronic arthritis is injected with typhoid vaccine, the reaction which follows is not unusual, except that frequently the joints involved become temporarily reddened and more painful during the reaction. In the successfully treated cases the pain disappears and motion in the affected joints is improved. In such cases, however, a relapse is not

uncommon unless the etiological factors, such as focal infection, etc., have previously been thoroughly eradicated.

It is generally agreed upon by clinical investigators that worthwhile results are obtainable with protein therapy only in a limited number of cases of arthritis. Klewitz[4] found that protein therapy checked the progress of chronic arthritis only in exceptional cases, and that usually in the course of a year further treatment had to be undertaken. Recent cases respond much more readily, and no benefit can be expected in very old cases or where there is an osteoarthritis. Yoeman (cited by Miller[1]) claims improvement in from eighty to ninety per cent. of the fifty selected cases treated by him, while most of the other clinicians who have used this treatment in arthritic patients claim improvement only in about fifty per cent.

TABLE 1. RESULTS IN CHRONIC ARTHRITIS

Case and Age	Duration and Symptoms	No. of Typhoid Treatments	Time of Treatment	Other Treatment	Immediate Results	Progress Subsequent to Treatment, and Condition of Patient Nov.'29
1 Mrs. A.A. 30	5 yrs. Pain, stiffness and moderate flexion deformity of all large joints. Unable to get about.	6	July 1927	Orthopedic	Marked relief. Able to walk around.	Able to walk around with fair degree of comfort.
2 Miss M.A. 60	5 yrs. with remissions. All joints painful. Frequent backaches.	6	July 1927	None	Marked improvement	No return of symptoms except for occasional slight backache.
3 Miss M.C. 55	8 yrs. Pain in all large joints and in fingers. Walks with difficulty.	6	August 1927	None	Marked improvement. Pain relieved. Walks without difficulty.	No return of symptoms.
4 Mrs. W.M. 54	8 yrs. Pains in hands, knees and back.	12	August 1927	None	Complete relief of pain.	Complete relief of pain.
5 Mr. W.C. 60	2 yrs. Painful joints. Limitation of motion in back and knees.	8	Sept. 1927	None	Practically complete relief of pain. Marked improvement in motion.	No return of symptoms except for slight pain in knees. Sept. 1929.
6 Mr. S.M.B. 62	10 yrs. Pain and deformity both knees and left hip. Motion limited in these joints.	6	Oct. 1927	None	Moderate relief of pain. Greater motion in affected joints.	Return of symptoms July 1929. Treatment repeated--moderate improvement.
7 Mrs. R.C.L. 33	2 yrs. Pain and deformity of hands, shoulders and knees.	6	April 1928	None	No improvement.	Repeated in June, 1928 without improvement.
8 Miss M.L. 30	6 yrs. Pain in all large joints. Flexion deformity of knees, elbows and wrists for one year.	9	Nov. 1928	Orthopedic	Marked relief of pain Moderate improvement in flexibility. Slight improvement in deformity.	No pain. Joint deformity improved only slightly.
9 Mrs. A.R. 52	2 yrs. Pain in elbow and knee joints. Moderate flexion deformity both knees. Unable to walk. Wassermann positive.	5	[illegible] 1928	Orthopedic and Antiluetic	Temporary relief of pain. Slight improvement in flexion deformity.	Complete return of symptoms. Unimproved.
10 Mr. L.D. 53	25 yrs. Pain in knees, arms and back.	12	Dec. 1928	None	Moderate relief of pain.	Condition unchanged since treatment.
11 Mrs. J.S. 55	4 yrs. Pain in shoulders and feet. Unable to walk about. Impaired motion of arms.	6	July 1929	None	Pain relieved. Can walk better. Motion of arms improved.	Condition unchanged since treatment.
12 Mrs. I.M. 38	1 yr. Pain in large joints. Blotchy, erythematous rash.	6	Sept. 1929	None	Complete improvement of arthritic as well as skin condition.	Arthritic condition unchanged since treatment. Complete return of skin rash.
13 Mrs.S.B.F. 42	5 mos. Painful joints. Flexion deformity of both knees and elbows. Left wrist swollen but not reddened.	5	Sept. 1929	None	Marked improvement. Able to walk around.	Return of all symptoms Oct., 1929.

PERIPHERAL VASCULAR DISEASE

Foreign protein therapy has been found to be a very valuable agent in peripheral vascular disorders. Since 1923, when Goodman and Gottesman[9] suggested the use of typhoid vaccine in the treatment of this group of diseases, numerous clinicians have used it with uniformly satisfactory results. Whether the action is due to an increased blood flow through the arteries present or to a development of a new and adequate collateral circulation is not known. Brown[2] considers it particularly beneficial in the conservative treatment of the chronic organic obliterative type of peripheral vascular disease. In thrombo-angiitis obliterans he found that in many cases the pain was relieved, and that the surface temperature was raised whenever dilating vessels were available. In vascular disease of the vasomotor type, as Raynaud's disease, on the other hand, he found protein therapy unsatisfactory.

In 1928, Allen and Smithwick[3] reported on the very satisfactory results they obtained with protein shock in twenty-five cases of peripheral vascular disorders, including thirteen cases of thrombo-angiitis obliterans, six of arteriosclerotic gangrene, two of vasomotor origin and four unclassified cases. Most of these cases were fairly well advanced and nineteen of the twenty-five patients had complete disability on admission. With one exception all of the patients treated showed some degree of improvement and twelve out of the nineteen patients with complete disability were able to return to their normal work.

The symptom most constantly relieved with non-specific protein therapy in thrombo-angiitis obliterans, in our experience, is pain, which may be temporary or permanent. Less constantly the

surface temperature is raised, the lesions gangrenous or ulcerative heal, and the pulsation of vessels and oscillometer readings show improvement. The protein reactions need not be very severe in character. It is advisable to use other conservative measures as adjuncts to this form of treatment, such as rest, large fluid intake, tobacco abstinence, Buerger exercise, and a heated cradle over the affected limb. We use also 300 c.c. of a five per cent. sodium chloride solution intravenously, as described by Silbert[10].

The most satisfactory results, however, we obtained in the three cases of Raynaud's disease that we treated with protein therapy. Immediate and lasting improvement resulted in each case. No other treatment was employed.

TABLE 11. RESULTS IN PERIPHERAL VASCULAR DISEASE

Case and Age	Diagnosis, Duration and Symptoms	No. of Typhoid Treatments	Time of Treatment	Other Treatment	Immediate Results	Progress Subsequent to Treatment, and Condition of Patient Nov. '29
1 Mr. E. M. 48	Thrombo-angiitis Obliterans. 8 mos. Pain, numbness, coldness and discoloration of lower left leg and foot. Oscillometer readings low.	4	Aug. 1927	As usual	Marked improvement of all symptoms.	No return of symptoms.
2 Mr. A. C. 38	Thrombo-angiitis Obliterans. 2 mos. Pain, coldness, swelling and discoloration of right foot.	4	April 1928	As usual	Marked improvement of all symptoms. Swelling and discoloration disappeared.	No return of symptoms
3 Mr. F.E.E. 58	Thrombo-angiitis Obliterans. 6 mos. Pain and discolcration of right foot. Gangrene of toes of same foot.	5	May 1928	As usual	No improvement.	Patient died following amputation of leg. (Probably due to embolism.) No necropsy.
4 Mr. J. C. 45	Raynaud's disease. 2 yrs. Burning pain both feet. Sudden blanching followed by redness. Small ulcer of little toe of left foot.	5	July 1928	Contrast baths and diathermy.	Marked improvement in symptoms. Discoloration disappeared.	No return of symptoms.
5 Mr. W. R. 39	Thrombo-angiitis Obliterans. 4 yrs. Pain in left leg on walking. Discoloration of left foot.	6	Oct. 1928	As usual	Marked improvement of pain and discolcration.	Partial return of pain in left leg on walking.
6 Mr. A. L. 34	Raynaud's disease. 2 yrs. Numbness, tingling and coldness of both hands. Sudden blanching followed by redness all fingers (except thumbs) one year's duration.	6	Oct. 1928	None	Complete improvement.	No return of symptoms.
7 Mr. C. C. 60	Raynaud's disease. 1 yr. Blanching of hands and feet particularly in cold weather; attacks lasting five to ten minutes.	8	Oct. 1928	None	Complete improvement	No return of symptoms.
8 Mr. T.J.C. 40	Thrombo-angiitis Obliterans. 1 yr. Pain in both lower legs and feet on walking. Feet cherry-red in color. Blanching on elevation.	5	Dec. 1928	As usual	Marked improvement of symptoms and discoloration.	Return of symptoms Sept. 1929
9 Mr. E. H. 57	Thrombo-angiitis Obliterans. 6 mos. Left leg amputated 4 mos. ago for disturbance similar to the present condition of right leg. Pain and discoloration in right lower leg and foot for the last ten days.	5	Jan. 1929	As usual	Slight relief of pain. Slight increase in surface temperature. Color unchanged.	Leg amputated in March 1929.
10 Mr. A. D. 67	Thrombo-angiitis Obliterans. 1 yr. Pain both legs. Discoloration of right foot and gangrene of left foot.	7	July 1929	As usual	Pain slightly relieved, otherwise no improvement.	Left leg amputated two weeks later, followed by death of patient four days afterward. (Probably septicemia) No necropsy.

PEPTIC ULCER

The results obtained with protein therapy in selected cases of peptic ulcer are striking—the first injection very often giving marked relief. Very severe reactions are apparently not necessary, and most patients can be treated ambulantly. Schindler[11] obtained twenty-four complete cures in a series of thirty-nine selected patients with gastric ulcer thus treated in combination with diet. Ten other patients had only occasional slight symptoms. There were ten cases of recurrence, in seven of which a repetition of the treatment brought prompt healing.

TABES DORSALIS

The use of non-specific protein therapy in tabes is so recent that no definite conclusions can be drawn from the results obtained. In 1928, Ebaugh[12] reported on the use of malaria in fifteen cases of tabes, all of which were resistant to all other methods of treatment. The pain was relieved in thirteen patients of this group, and out of ten who were unable to work when they reported for treatment, eight returned to work and became self-supporting. The clinical and laboratory findings in most of these cases also showed definite improvement.

GENERAL PARESIS

Since 1917, when Wagner-Jauregg first used malaria in general paresis, this form of treatment has been used in many psychiatric clinics throughout the world with fairly satisfactory results. Of four hundred cases treated by Wagner-Jauregg previous to 1924 and reported upon in 1925, thirty-one per cent. had complete remissions, while 14.2 per cent. had incomplete remissions[1]. The results obtained by other clinicians since that time have been very similar (about thirty per cent. remissions).

Although Wagner-Jauregg was unable to obtain good reactions with typhoid inoculations, Hall, Kunde and Gerty[13] reported satisfactory reactions in paretics by injecting increasing doses of typhoid vaccine, beginning with fifty

million and increasing to one and one-half billion.

Hoff and Silberstein showed that a chill in a paretic patient increased the spirocheticidal activity of the spinal fluid. There is, however, little or no relationship between the spinal fluid findings and the clinical changes in the patient[1].

alitis (post-encephalitic syndrome) in which we employed protein therapy, only one showed slight but lasting improvement. In the other three cases there was a slight improvement immediately after treatment, but this proved only temporary, all the symptoms returning within about two months.

TABLE III. RESULTS IN PEPTIC ULCER

Case and Age	Diagnosis, Duration and Symptoms	No. of Typhoid Treatments	Time of Treatment	Other Treatment	Immediate Results	Progress Subsequent to Treatment, and Condition of Patient Nov. '29
1 Mrs. P. F. 54	Peptic ulcer. 2 yrs. Duration. Pain and distress in epigastrium. Nausea and vomiting.	4	June 1927	Sippy diet	Marked improvement	No return of symptoms on a more generous diet.
2 Mrs. C. H. 60	Peptic ulcer. Symptoms of partial obstruction began 3 yrs. ago, when a diagnosis of inoperable cancer of stomach was made. Mass in epigastrium size of orange. Marked dehydration.	3	August 1927	Glucose and salt solution intravenously.	Cessation of vomiting and disappearance of mass.	6 mos. later, because of partial return of symptoms laporotomy was performed. No mass or ulcer found.
3 Mrs. M. K. 45	Peptic ulcer. 2 yrs. Pain in epigastrium. Nausea and vomiting. Large mass in epigastrium. X-ray diagnosis: obstructive duodenal ulcer.	4	Dec. 1928	6-meal diet. Alkaline powders.	Mass disappeared after second injection. Symptoms disappeared after 4th injection.	Complete return of symptoms followed by gastro-enterostomy 7 mos. later.
4 Mr. R. C. 36	Duodenal ulcer. 1 yr. Distress, nausea and occasional vomiting. Partial relief of symptoms on Sippy treatment.	6	August 1929	6-meal diet Alkaline powders.	Complete absence of symptoms on a more liberal diet.	No return of symptoms. Comfortable on a liberal diet.

TABLE IV. RESULTS IN TABES DORSALIS

1 Mrs. M. S. 38	Tabes Dorsalis. Severe epigastric pain. Marked ataxia. Achilles reflex absent. Blood and spinal fluid Wassermann positive	5	Nov. 1928	None	Complete relief of pain. Marked improvement in gait. No change in reflexes.	No return of symptoms. Patient did not return for further treatment.

CHRONIC ENCEPHALITIS

In 1923, Leiner[14] reported on the very good results that he obtained with protein therapy in the treatment of twenty-one patients affected by post-encephalitic mental changes. The results accomplished subsequently, however, by other clinical investigators were much less satisfactory. Of the four cases of chronic enceph-

SUMMARY AND CONCLUSIONS

(1) Thirty-four cases have been treated by us with non-specific protein therapy in the form of intravenous typhoid vaccine, during the last two or three years. Thirteen of these cases were of chronic arthritis; seven were thrombo - angiitis obliterans; three

TABLE V. RESULTS IN GENERAL PARESIS

Case and Age	Diagnosis, Duration and Symptoms	No. of Typhoid Treatments	Time of Treatment	Other Treatment	Immediate Results	Progress Subsequent to Treatment, and Condition of Patient Nov'29
1 Mr. J.F. 66	General Paresis. Luetic infection 15-20 yrs. ago. Abdominal pain. Iritis right eye. Mental symptoms. Knee jerks absent. Blood and spinal fluid Wassermann positive. Paretic curve.	5	June 1929	None	Abdominal pain relieved. Iritis markedly improved. General clinical improvement. Reflexes and laboratory findings unchanged.	Tryparsamide injections weekly. No return of symptoms, except for photophobia.
2 Mr. J.W. 43	General Paresis. Luetic infection 24 yrs. ago - treated. Fainting spells, headache and scanning speech. Memory poor. A.-R. pupils. Knee jerks absent. Blood and spinal fluid Wassermann positive. Paretic curve.	7	May 1929	None	Complete relief of abdominal pains, headaches and fainting spells.	Antiluetic treatment since May, 1929. No abdominal pain or fainting spells.

TABLE VI. RESULTS IN CHRONIC ENCEPHALITIS

1 Mr.E.J.C.	"Grippe" infection 2-3 yrs. ago Lethargic. Pill-rolling motion. Unable to walk or to feed himself.	10	Sept. 1927	None	Moderate improvement. Can walk around. Feeds himself.	Return of all symptoms within two months.
2 Mr. H.G. 69	"Grippe" infection 2-3 yrs. ago. Tremor, ataxia, scanning speech.	6	Nov. 1927	None	Slight improvement of all symptoms.	Return of all symptoms within several weeks.
3 Mr.J.J.B. 46	"Grippe" infection 7 yrs. ago. Tremor of hands, dragging of right foot. Masked expression.	6	Jan. 1928	None	Moderate improvement of all symptoms.	Partial return of symptoms. Condition definitely better than before treatment.
4 Mrs.W.D.B. 45	"Grippe" infection 1 yr. ago. Weakness, tremor and rotary movement of both hands.	5	May 1928	None	Slight improvement.	Return of all symptoms.

were Raynaud's disease; four were chronic encephalitis; four were peptic ulcer; two were general paresis, and one was tabes dorsalis.

(2) Because of the small number of cases treated, and the comparatively short interval since treatment, too definite conclusions must not be drawn from the results obtained. The condition of all of these patients was checked during November, 1929.

(3) Nineteen patients showed marked improvement; nine showed a slight improvement, while six patients showed no, or very slight, improvement. Of the four cases of chronic encephalitis, only one showed slight but lasting improvement.

(4) Non-specific protein therapy, we believe, is a safe and useful adjunct to the armamentarium of the general practitioner in the treatment of certain chronic conditions.

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NOTICES OF JUDGMENT — ISSUED FEBRUARY, 1930

Notices of judgment under the food and drugs act as issued for February, 1930, include the following:

16566—*Salicon*

On February 5, 1929, the United States Attorney for the District of Maine filed a libel praying seizure and condemnation of a quantity of this product consigned by the K. A. Hughes Company from Boston, Massachusetts, charging misbranding in violation of the food and drugs act as amended.

It was alleged in the libel that the article was misbranded in that the following statements, among others, regarding the said article were false and misleading: "Salicon will not affect the heart, will not upset the stomach. . . . Salicon is also a germicide."

Other statements regarding the curative and therapeutic effects of the article such as: "For . . . Influenza, Rheumatism, Neuralgia, Neuritis, Sciatica, Lumbago, etc. . . . For Headache, Backache, Earache, Periodic and other Pains." "For Headache, Toothache, Backache, Earache, Influenza, Rheumatism, Neuralgia, Neuritis, Sciatica, Lumbago, etc.," were alleged to be false and fraudulent in that the article contained no ingredient or combination of ingredients capable of producing the effects claimed.

On May 28, 1929, the K. A. Hughes Company, Boston, Mass., having appeared as claimant for the property, judgment of condemnation and forfeiture was entered, and it was ordered by the court that the product be released to the said claimant upon payment of costs and the execution of a bond in the sum of $500, conditioned in part that the claimant empty the product from the containers into unlabeled boxes or remove entirely and destroy the bottle labels and destroy the labelings, circulars, brandings, cartons, and all printed matter accompanying or used in connection with the product.

Action filed February 19, 1929, in the District of Connecticut against a quantity of this product alleged to have been shipped by the Neuro Chemical Company, West New Brighton, N. Y.

Statements such as: "Neuro-Nerve Powders will give prompt relief in obstinate cases of neuralgia, toothache . . . and la grippe", and recommendations of the product for such ailments as sciatica, sore throat, and all nerve pains were alleged to be false and fraudulent.

On March 7, 1929, by consent of the claimant, judgment of condemnation and forfeiture was entered, and it was ordered by the court that the product be destroyed by the United States marshal.

In the following cases no claimant appeared for the property and accordingly judgment of condemnation and forfeiture was entered and it was ordered by the Court that the products be destroyed.

16561—*Nutriol*

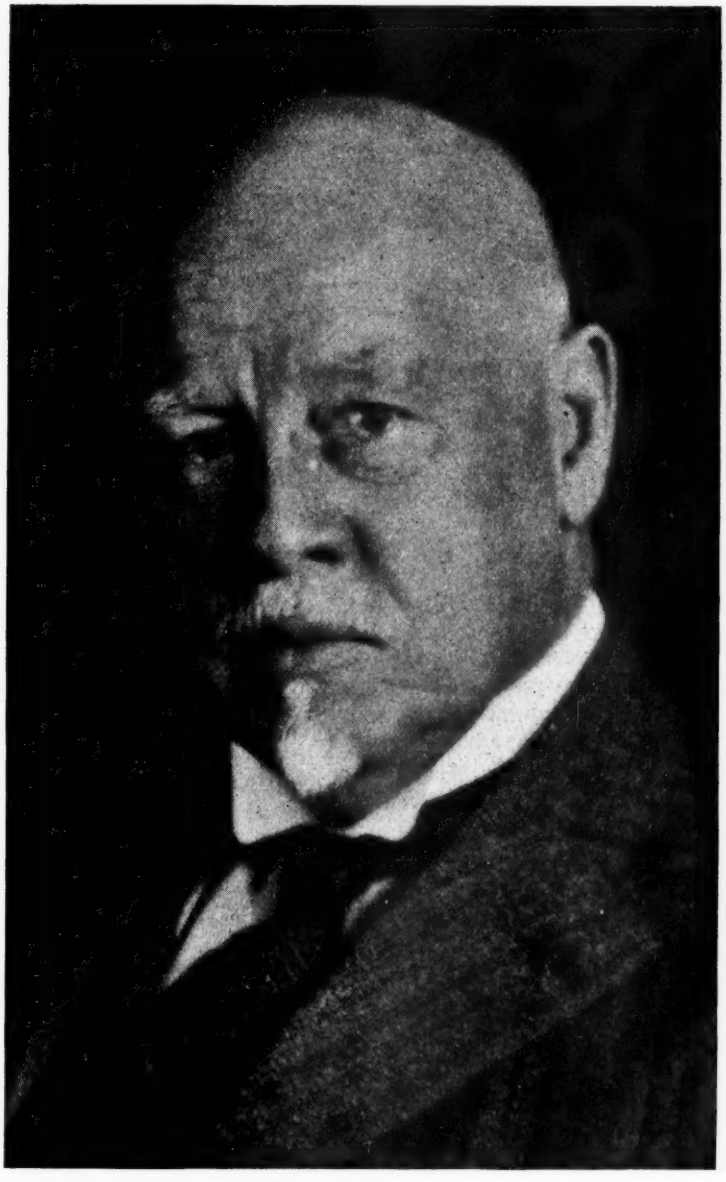
Libel filed April 20, 1929, in the District of Massachusetts against a quantity of this product allegedly shipped by Boss & Seiffert Company, Inc., Providence, R. I.

It was alleged in the libel that the article was adulterated in that its strength fell below the professed standard under which it was sold, namely, "Extract of Cod Liver Oil".

Statements recommending the use of the product as a general rebuilding tonic, in defective Nerve Nutrition, in all wasting diseases, etc., were alleged to be false and fraudulent.—*Bulletin National Better Business Bureau.*

DR. WILLIAM HENRY WELCH

A Biographical Sketch



DR. WILLIAM HENRY WELCH

DOCTOR WILLIAM HENRY WELCH is admired because of his distinguished leadership in revolutionizing American medical education and because he has probably done more than any other man, living or dead, to inspire American public health measures. He is loved because of his radiant nature, his constant readiness to serve others, and his charming habit of underrating his own achievement.

No one could be less concerned than Dr. Welch over the ironical fact that, eminent as he is, his fame has never reached the multitudes. With no urge of showmanship, no striving for popularity in his numerous writings, and nothing sensational in the manner of his life and work, Dr. Welch has not frequently been named in headlines of the nation's press, and he remains virtually unknown to millions who have benefited from his contributions. Outside of his own profession and immediate circles it is almost a mark of distinction to know why Dr. Welch is distinguished.

At the Johns Hopkins University, in Baltimore, where this "dean of American medicine" has taught for forty-five years, he is lovingly known as "popsy". There everyone knows this kindly gentleman with twinkling eyes, white moustache and Vandyke, squared jaws, and head held characteristically to one side. He is somewhat stocky in build, and he walks with the vigor of a man a generation younger.

Today he is the Professor of the History of Medicine at Johns Hopkins, having been appointed to this chair in 1926 upon his resignation from the directorship of the Johns Hopkins

School of Hygiene and Public Health, the first school of public health in the world. When he was selected to organize this school, in 1916, he had been the Professor of Pathology for more than thirty years in the medical faculty of which he was the original member.

William Henry Welch was born in Norfolk, Connecticut, April 8, 1850. His father was a practising physician, as were also four uncles. A grandfather and a great-grandfather had also been physicians. He prepared for college at a boarding school at Winchester Centre, and entered Yale at the age of sixteen. In 1870 he received the degree of Bachelor of Arts, the third man in a class of one hundred and eleven.

The mind of the youthful graduate was now on the classics, and he spent a year teaching Greek and Latin at a school in Norwich, New York. He was born for medicine, however, and in the autumn of 1871 Welch matriculated in the College of Physicians and Surgeons, in New York City. Hardly had his studies begun when he perceived the need of a better scientific foundation, and he returned to Yale to study chemistry in the Sheffield Scientific School, and to take courses also at the Yale Medical School. There he formed an enduring friendship with T. Mitchell Prudden, and the two men in their later careers exerted a joint influence in developing the new science of pathology in America.

After one year of graduate work at Yale, Welch entered the College of Physicians and Surgeons. At this institution the didactic lecture was the chief means of instruction and, with the exception of the courses in anatomy, there was little opportunity for practical objective study. Welch, however, worked eagerly in the dissecting room, and very soon became an assistant to the professor of anatomy. In a student competition he was awarded the prize of a microscope, a comparatively rare instrument in those days, and with that microscope he began his notable career in the new pathology, the scientific study of diseases.

In the autumn of 1874 Welch became an interne at Bellevue Hospital, where he remained a year and a half. Here he seized upon the opportunity to perform post-mortem examinations, thus accumulating knowledge on the history of diseases in individual cases.

Although Welch still thought that his life work was to be that of a practising physician, he sought a more complete medical education abroad. In the early summer of 1876 he arrived in Strassburg. During the summer semester at Strassburg University he studied normal histology and physiological chemistry besides attending autopsies. His teachers were Waldeyer, Hoppe-Seyler, Baumann, and von Recklinghausen.

After this summer work he went to Leipzig, where he studied pathological anatomy, as well as practical medicine, under Wagner. He also worked in Ludwig's laboratory, where he revealed special aptitude for microscopic investigation.

At the end of the school year in Leipzig, Welch went to Breslau for the summer session to study under Cohnheim, who was then writing his text-book on general pathology. The young American student was assigned a problem involving a special study of the heart, and was so successful that his findings were embodied in the professor's new book. Welch was now in the midst of important scientific events that established the germ theory of disease. In Cohnheim's laboratory, for example, he witnessed the experiments of Robert Koch, who had come there to demonstrate that the dreaded disease anthrax was caused by a bacillus. Koch's discovery was the first conclusive proof that bacteria may cause disease.

Incidentally one of Welch's fellow students in Breslau was Salomonsen, who afterwards as the celebrated professor of pathology at Copenhagen, declared that Welch was one of the two men who had most influenced his life.

After the summer studies with Cohnheim were over, Welch went to Vienna, then the mecca for foreign medical students. Here he studied pathology under Chiari, neurology and psychiatry under Meynert, and took courses on the skin under Hebra. He remained in Vienna several months and then went to Strassburg again to study pathological anatomy under von Recklinghausen, whose theories, as Welch knew, were in many cases contrary to those of his other teachers in Europe. This first European study tour of Welch included a visit to many of the hospitals in Paris and a short stay in London, where he heard Lister lecture at King's College Hospital.

Welch returned to New York in the spring of 1878 where he began earning an income from the practice of medicine and from tutoring candidates for interneships in hospitals, or appointments to the medical services of the Army and Navy. His major bent, however, was to teach pathology. At this time America was curiously isolated from the strong movements in Germany and France along the lines of bacteriology, experimental pathology, and pathological anatomy. Welch was destined to play the principal rôle in establishing the new methods and bringing the new learning to America.

Within a few weeks after his return from Europe he was invited to become lecturer on pathology at the College of Physicians and Surgeons, but he declined, with characteristic decision, because the offer brought him no opportunity to set up the laboratory which he considered absolutely essential. Immediately the rival institution of Bellevue Hospital Medical College prepared a laboratory for the young pathologist, and invited him to teach. Soon students were coming to him from several different medical schools. Again he was offered a position at Physicians and Surgeons, this time with the promise of a laboratory, but again he declined. He recommended his friend Prudden for the position and the latter accepted.

Within the next half dozen years Welch,

through his experimental and inspiring methods of teaching at the Bellevue College, attained a high position in the medical profession of New York. Meanwhile events were in the making in Baltimore which were destined to give Welch leadership in the revolutionizing of medical education in America.

President Gilman of Johns Hopkins University inquired in Europe for a scientist to guide the new medical school of the University, which was being established. He was advised by eminent European professors that the ideal man for the task was an American by the name of William H. Welch. As a result Welch was called to the chair of pathology at the University and to the position of pathologist to Johns Hopkins Hospital. This was early in 1884. The new professor immediately decided to prepare himself by further study in Europe. His aim was to study bacteriology under Koch, in Berlin, but on the advice of this master he went first to Munich to study under one of Koch's pupils and also to study hygiene under von Pettenkofer. In January, 1885, he went to Goettingen to work under Fluegge, professor of hygiene, who was being advised by Koch. Finally he was ready for the great Koch himself. He attended a course under him in which the climax was the epoch-making study of the bacillus inducing Asiatic cholera.

Welch began his work in Baltimore in the autumn of 1885. Although the construction of the medical school was delayed, the future dean made immediate advance in developing a new science of pathology wherein all the various branches of the subject were correlated so as to bring all available knowledge to bear on the study of diseases.

Welch was the principal adviser in the early development of the Johns Hopkins Hospital and in the selection of the other three original members of the staff, Osler, Halsted, and Kelly. When the Johns Hopkins Medical School was opened in 1893 Welch was naturally made dean, and he held this post until 1898, while performing his other duties as professor and as pathologist to the Hospital.

Describing the methods and results of Welch's university work, Dr. Simon Flexner, his associate for eight years, says of him in a highly informative biographical sketch:

> "He conducted investigations of his own, launched others on productive themes, and saw to it that the invaluable pathological specimens from the surgeons and gynecologists were made use of to advance knowledge and train a generation of special pathologists in those important fields. He lectured on special and general subjects in pathology and bacteriology in a manner so learned and fascinating as to produce impressions not only immediately stimulating to his auditors in high degree but of enduring permanence. The suggestiveness of these lectures led frequently to new undertakings in research. Moreover, the autopsies he performed, his demonstrations of gross pathological specimens and his teachings at the microscope stand out as unsurpassable models."

The men who studied under Dr. Welch caught the zest of his personality and soon disseminated his methods. A formidable company of them have gone to other institutions to teach, and several of these have become deans of medical schools.

In the realm of public health, hundreds of Welch's students have gone out to campaign for such reforms as better sewer systems, filtration systems for purifying water, and means to control the handling of milk, to mention only a few measures necessary to prevent the spread of disease.

Welch was President of the Maryland State Board of Health for twenty-four years, and is credited with being the chief influence in bringing about modern sanitary conditions in the city of Baltimore. His advice has been sought by several Presidents of the United States, by Senators and Members of Congress, and by many others in public positions. In this way he has been a strong factor in the enactment of laws necessary for the success of preventive medicine and public health. It was through his advice that the Yellow Fever Commission of the United States Army was created which accomplished the discovery of the rôle of the mosquito in the spread of yellow fever.

In July, 1917, Welch entered the Medical Reserve Corps of the United States Army, with the rank of major. He was a colonel when discharged from active duty on December 31, 1918. He was made brigadier-general in the Officers Reserve Corps on December 23, 1921.

Welch's war service necessarily interfered with his duties as Director of the Johns Hopkins School of Hygiene and Public Health, to which he had been appointed in 1916. This school, the first of its kind in the world, was opened for students in 1918. It was dedicated, in its own building, in October 1926. Shortly thereafter Dr. Welch resigned the directorship, being succeeded by Dr. William H. Howell, who had been associated with him many years.

At the age of 76, Dr. Welch might well have taken a rest from his pioneering. Instead of that he accepted the position of Professor of the History of Medicine and undertook to establish the Johns Hopkins Institute of the History of Medicine. With characteristic determination, he went abroad, in 1927, for new material, this time to study a similar institute at Leipzig and to buy books in Germany, France, Italy and England. On this journey he also served as a member of a committee to inspect the control of malaria in Italy.

When the Medical Library building of Johns Hopkins University was dedicated on October 17 and 18, 1929, it was designated the "William H. Welch Medical Library". The dedication exercises attracted leading medical men from abroad as well as from all over the United States, a tremendous tribute to Dr. Welch's personal influence and achievements.

An example of how the eminent doctor reacts

to praise is furnished by his remarks at the Fortieth Reunion, in 1910, of the Class of 1870 of Yale. Welch said to his classmates: "Now you have been much too generous in your estimate of the little I have been able to do. It is an estimate due to your friendship. The explanation of whatever success I may have attained is simple enough. It is simply because I had the opportunity. There was a desire for a broader medical education and I had the good fortune to have unusually capable men coming to work with me."

Welch has himself participated in many celebrations at educational institutions, sometimes traveling far in order to do so. Thus in 1921 he went to China to attend the formal opening of the Peking Union Medical College. In the spring of 1928 he attended the Harvey Tercentenary Celebration, in London, under the auspices of the Royal College of Physicians, and spoke in behalf of all American medical institutions.

The list of Dr. Welch's writings includes some 350 titles. Among them are "General Pathology of Fever", 1888; "The Biology of Bacteria, Infection and Immunity", 1894; "Bacteriology of Surgical Infections", 1895; and "Thrombosis and Embolism", 1899.

Dr. Welch is at present the Chairman of the Advisory Council of the Milbank Memorial Fund, and the President of the Board of Directors of the Rockefeller Institute for Medical Research. He is a member of numerous scientific societies and associations in many countries, and has received honorary degrees from more than a dozen universities and colleges.

Celebrations arranged by the committees in recognition of the Eightieth Birthday of Dr. Welch April 8, 1930, will take place in London, Paris, Berlin, Leipzig, Tokio, and Pekin, as well as in Baltimore, Cincinnati, New Haven, New York, and Washington, D. C.

At Washington, President Hoover will speak on a program in Memorial Continental Hall, beginning at noon, which will be heard over a national hook-up of the National Broadcasting Company. It is expected that the program will also be broadcast by short wave and that it may be heard by those participating in the simultaneous ceremonies in foreign countries.

A unique feature of the celebration has been arranged through the coöperation of Alfred Hutty, the etcher, of Charleston, South Carolina, who was commissioned to make a drypoint portrait of Dr. Welch. The first print from the plate will be given to Dr. Welch at the Washington ceremonies, and there will be simultaneous presentation of other prints from the same etching to more than forty institutions in this country and abroad, with which Dr. Welch has been connected as student, teacher, or adviser.

President Livingston Farrand will deliver the opening address at the Washington ceremonies which will be witnessed by an invited audience of eminent scientists and other distinguished men and women.

The Executive Committee in charge of the celebration consists of Dr. Flexner, Chairman; John A. Kingsbury, 49 Wall Street, New York City, Secretary; Dr. William H. Howell and Dr. William G. MacCallum, of Baltimore; Dr. William T. Councilman and Dr. Harvey Cushing, of Boston; Abraham Flexner, Homer Folks, John D. Rockefeller, Jr., and Wickliffe Rose, of New York; Dr. Eugene L. Opie, of Philadelphia; and Vernon Kellogg and Senator Frederic C. Walcott, of Washington. Professor Albert A. Michelson, of the University of Chicago, has accepted the chairmanship of the General Committee, which is now being formed.

ESSENTIALS VS. NON-ESSENTIALS IN MILK SANITATION*

BY PAUL B. BROOKS, M.D.†

ANYONE who has had the good fortune to take a sea trip and witness the operation of navigation knows that periodically the Skipper lays out his chart, notes the location of the ship's ultimate destination and then takes "bearings" to make sure that he is on the right course. This sort of procedure, with modifications to suit conditions, applies equally well to other lines than navigation, and recently I have been trying to apply it to milk sanitation. We have been sailing mostly by "dead reckoning" and after having taken "bearings" there is some doubt in my mind as to whether we are on the right course or not.

Looking at the matter from a public health standpoint the ultimate aim of milk sanitation is to make milk safe, meaning by *safe* milk that which can be used freely by old or young without danger or detriment to health. Past experience indicates the conditions to be guarded against. Diarrheal diseases among infants were at one time extremely prevalent and every year we had hundreds of deaths from this cause. "Summer complaint" and "cholera morbus" were terms in common use. Milk with an excessive bacteria content was probably the most important factor. Rosenau estimates that about 25 per cent. of the tubercular infections among children under five years of age are of bovine origin. Glandular, abdominal and, to a somewhat smaller extent, bone and joint tuberculosis are the types most likely to be traceable to infection from this source. During a thirteen year period beginning January 1, 1917, in New York

*Read before 23d annual meeting of Massachusetts Milk Inspectors' Association, January 9, 1930, at Worcester, Mass.

†Brooks—Deputy State Health Commissioner. For record and address of author see "This Week's Issue," page 595.

State exclusive of New York City we have had 89 outbreaks of communicable disease and gastroenteritis definitely traced to milk. How many isolated cases of milkborne infection not connected with outbreaks have developed we have no way of knowing definitely, but it is reasonable to assume that there have been many. Of the 89 outbreaks, 63 were of typhoid fever, 50 of them traced more or less definitely to carriers, most of whom were on the farms. Four of the outbreaks were of gastroenteritis, with a total of approximately 323 cases, traced to raw milk from herds in which there were cases of mastitis. Of 4 milkborne outbreaks of septic sore throat 3, with a total of 721 cases, occurred in 1929. We have had our share of cases of undulant fever, some of which apparently were traceable to milk from herds infected with abortion.

Summarized, the conditions to be guarded against then are:

(1) Diarrheal diseases in infants, traceable to excessive numbers of "dirt" bacteria;
(2) Tubercular infection in children;
(3) Certain communicable diseases and gastroenteritis, which may occur in the form of outbreaks involving persons of all ages, as well as children;
(4) Undulant fever, which is not included in the last item because it constitutes a separate problem.

With the conditions clearly before us the first thing we should want to know is "What are we doing to guard against them?" In endeavoring to answer this question I sat down with a copy of our State milk code (Chapter III of the State sanitary code) and tabulated its requirements roughly in three columns, putting in one column those bearing *directly* on the prevention of these conditions, in another those bearing *indirectly or remotely* and in the third those having *no bearing*. This code is regarded by many competent "authorities" as at least one of the best of its kind in existence; yet the result of the tabulation was, in certain respects to be explained presently, rather disconcerting.

The code regulates pasteurization, where it is carried on, but does not require it. At the present time the enactment of a law or regulation requiring the pasteurization of all milk sold in the State would not be practicable. However, there are 23 of our cities (other than New York) in which 75 per cent. or more of the milk supply is pasteurized, and in five of the largest on this list the percentage of pasteurized is over 95. Probably something like 50 per cent. of the total supply of the State is pasteurized. Only two of the 89 outbreaks previously referred to were traced to pasteurized milk and these occurred before we had begun concentrating our efforts to the extent that we are concentrating them today on making pasteurization efficient. So we feel safe in assuming that our supply of pasteurized milk, at least relatively speaking, is safe and our further comments will relate chiefly to raw milk.

A large majority of the code requirements relating to raw milk have to do with cleanliness and content of "dirt" bacteria and to such matters as tastes and odors. Not so many years ago we were satisfied with raw milk with a "dirt" bacteria content of a million or more per cubic centimeter. Today our standard is thirty thousand or better. Much, though not all, of the milk sold conforms approximately to this standard, and the proportion of that conforming is progressively increasing. It is a well-known fact that babies are far more susceptible than adults to the effects of "dirty" milk. While this improvement in "dirt" bacteria content has been going on our death rate from diarrheal diseases in infancy has been coming down steadily. While pasteurization probably is the most important factor in this saving, reduced bacteria content in raw milk undoubtedly also is a factor. Thus it is evident that our efforts to enforce the milk code requirements and "clean up" the milk supply have made our raw milk much safer *in this respect* for infant use than it formerly was. In the meantime there has developed an erroneous impression, existing even among some health officials, that clean milk—meaning that with a low "dirt" bacteria content—is in all respects safe milk.

During the past several years cases of glandular, abdominal and bone and joint tuberculosis among children have become much less common than formerly. Pasteurization and, more recently, tuberculin testing of cattle have had something to do with this. Under our code raw milk cannot be sold unless it comes from tested herds or (for Grade B, which we hope soon to eliminate) unless the owner of the herd has made formal application for the test. Probably we are doing all that should be expected in this respect. As for undulant fever, feeling that there is much that we still need to know about the relationship between abortus infection and undulant fever we have not yet felt like going beyond advising health officers that milk from a herd to which cases of human infection have been traced should not be permitted to be sold without pasteurization.

Thus milkborne epidemics or "outbreaks" at present constitute our most pressing practical problem. Referring to the 89 outbreaks already mentioned as having occurred in New York State exclusive of New York City in the thirteen year period ending October 15, 1929, they give us an average of 4 such outbreaks yearly. This looks like a bad record, yet I imagine it would not compare unfavorably with the records of other states where the per capita consumption of milk is as high and outbreaks as carefully investigated and recorded. Dividing the last nine-year period into periods of 3 years each, we had only about one-third as many outbreaks in the past

three-year period as in the previous two. The decline was chiefly in the number of milkborne typhoid outbreaks. This decline probably was due largely to general reduction in the prevalence of typhoid fever and better control of carriers, rather to anything done specifically in connection with our milk sanitation program. The conditions contributing most to the totals in the past two three-year periods were gastroenteritis and septic sore throat. It was not until about the beginning of the second period that health officers were required to report the occurrence of outbreaks of gastroenteritis; otherwise the totals for the first and second periods probably would have been higher. After all, we still had our general yearly average of 4 milkborne outbreaks last year, which makes it quite evident that we are not effectively preventing such outbreaks.

The sources of infection in these outbreaks have been three: milk handlers suffering from certain diseases, milk handlers not ill but carriers of the germs of certain diseases, and cows with mastitis. Our code (Chapter II, relating to communicable diseases) requires that when a case of one of certain specified communicable diseases occurs on a dairy farm the attending physician must report it immediately and, unless the case is so isolated that the sick person and those associated with him are completely cut off from any contact with the milk or utensils, the shipment of milk from the farm must be stopped. However, it is when the sick person does not recognize the nature of his illness and does not consider himself sick enough to necessitate calling a doctor that he is most dangerous. Typhoid carriers are forbidden to handle milk, but most of them do not know that they are carriers until epidemics have been traced to them. Milk handlers are required to submit for laboratory examination such samples of bodily discharges as the health officers require, but, chiefly because of the time and effort likely to be involved the health officers, with a few exceptions, do not demand such specimens. Mechanical bottling and capping are required with a view to eliminating human contact, but the contamination of milk during the bottling and capping operations occurs much less frequently than during the handling on the farm. An annual veterinary examination of each herd is required, but an examination once a year—even if carefully made—will accomplish very little in the detection of the dangerous cases of mastitis. In short, the measures required by the code to be applied are not such as can be depended upon to make raw milk in general even approximately as safe, insofar as conveyance of this type of infection is concerned, as milk which has been effectively pasteurized.

There are, however, certain measures which if they could be conscientiously and thoroughly applied, even conceding that they are not infallible, would have a direct and immediate effect on the safety of raw milk. Presented in outline, they are the following:

SAFETY MEASURES

A. Protecting Against Mastitis

(1) Manual examination, by the dairyman, of the udder of each cow daily;
(2) Milking foremilk on a pail cover or other flat surface and examining it;
(3) Immediate exclusion by the dairyman of milk from any cow showing evidences of mastitis;
(4) Continuous veterinary supervision, the dairyman to call the veterinarian at the first sign of trouble;
(5) Weekly bacteria counts on herd samples.

B. Protecting Against CASES of Communicable Disease

Immediate reporting by the dairyman to the health officer of all cases of illness on the farm or in the plant, however apparently trivial, involving fever, sore throat or stomach or bowel trouble.

(Note: This would give the health officer a "check" even though he did not consider it necessary to investigate every case personally.)

C. Protecting Against CARRIERS

(1) Typhoid history and Widal of all milk handlers with a sufficient number of specimens of excreta for laboratory examination to give reasonable assurance of freedom from the typhoid carrier condition.
(2) At least one throat culture from each milk handler and additional cultures upon the occurrence of any sore throat.

Except that some of these measures are required to be applied on "Certified" farms, they are not applied to any extent in the State. If they had been suddenly injected as requirements at the time our code was being revised about two years ago they would have called for such radical changes in procedure that it is very doubtful if they would have been enforceable. If they were to be established as legally required procedures their establishment would have to be a gradual process, preceded by considerable educational effort.

The question, of course, is whether it would be practicable to apply these measures generally. Experience with the application of some of them on "Certified" farms indicates that if someone pays for them it is not difficult to apply them. It should be borne in mind, in this connection, that the relatively high price of Certified milk is by no means wholly chargeable to the application of measures included in this list.

During the thirteen-year period previously referred to, about 7 per cent. of the total number of typhoid cases reported in "up-State" New York and about 18 per cent. of those of

septic sore throat occurred in the milkborne outbreaks. Practically 100 per cent. of our 1929 septic sore throat cases occurred in such outbreaks. An outbreak of sickness invariably occasions expense, as well as anxiety and inconvenience hard to measure in dollars and cents, on the part of those affected. To have a milkborne epidemic traced to his door usually means loss of business and sometimes financial ruin to the producer or dealer. A serious epidemic may mean a decline in milk sales over an area far greater than that in which the infection actually operates. Everything considered, it would seem that the expense incident to the application of these measures would be more than counterbalanced by the saving in prevention of sickness and by the benefit to the industry from protection of business and the increased milk consumption likely to result from assurance as to its safety.

There also is a possibility of saving both to the municipality and the industry through the elimination from our regulations of those requirements which have little or nothing to do with safety but bear only on quality. Such things as fat content, tastes and odors have to do with marketability rather than safety and in the present state of public enlightenment might very well be left to the industry and the consumers; at any rate they should not greatly concern the health authorities. We need to maintain reasonable bacterial standards and should insist upon conformity to them, but it ought to be feasible today to leave it largely to the milk industry to determine what measures and equipment are required.

Consideration of the facts set forth here, with others, has led us to certain fairly definite conclusions. Practically all of our milkborne infection in "up-State" New York has been traceable to raw milk. Generally speaking, it never can be made quite as safe as milk of good quality effectively pasteurized, but it is possible to make it much safer than at present. Our major effort should be directed toward stimulating demand for pasteurization and making it efficient, but compulsory pasteurization on a State-wide basis is not feasible. So far as the raw milk supply is concerned we should regard as essential measures those most likely to produce positive results in increased safety, and endeavor by education, stimulation and, eventually, legislation to secure their application. If, perchance, this should be found to mean increased expense to the municipality or increase in price of the product, we, at least, would have the consolation that we were getting something tangible for our money. While we are recommending the addition of essential requirements we should be as ready to recommend the deletion of the unessential.

BRODIE'S ABSCESS IN A PELVIC BONE

BY CHARLES F. PAINTER, M.D.*

THE lesion presented by the patient whose record is to be cited is unusual only because of its localization. The incidence of osteomyelitis in flat bones is rare as compared with that in the long ones and the occurrence of this particular type of osteomyelitis in flat bones seems even more uncommon. It may very well be, however, that the ratio of Brodie's abscess to ordinary osteomyelitis in long bones is preserved when it comes to the flat ones, for I am not familiar with any comparisons of relative frequency of incidence. It is worthy of note in this connection that tuberculous lesions of the pelvic joints are also rare. These facts raise the question as to whether the protected location of the pelvic skeleton may not help to defend against whatever rôle trauma may play in producing a "locum resistentiae minoris." The gluteal muscles protect the ilia and though the component parts of the pelvic girdle are allowed some slight play at their synchondroses, still they are firmly joined by strong ligaments and the symphysis pubis has a thick cartilage interposed as a buffer between the adjoining ends of the pubic bones.

These anatomical defenses, together with the shape of the pelvic girdle, which permits of some yielding in event of the receipt of a sudden, severe trauma, might very possibly explain the freedom which these bones and joints enjoy from the incidence of osseous and articular infections. Their blood supply is no less abundant than it is in the long bones and the method of development from several ossification centers does not create any unusual situation in respect to providing bacteria or cocci, circulating in the blood, with a favorable culture medium upon which to develop. The skeleton of the thorax offers much the same defense in respect to the incidence of osteomyelitis and tuberculosis. The bones entering into its structure are flat bones with the exception of the vertebral column, and it alone of all the osseous structures that participate in the make-up of the thorax, suffers from either of these diseases with any degree of frequency. The lack of rigidity is more conspicuous here than in the pelvic girdle. Muscular protection, however, is not so evident, though perhaps not so lacking as at first it might appear to be. Again, the shoulder girdle is notable for the relative infrequency with which these two common osseous infections are diagnosed in this location. There, too, a mobility is found which must lessen the severity of a trauma which might conceivably render the

*Painter—For record and address of author see "This Week's Issue," page 595.

bones liable to bacterial invasion. The only other flat bones in the body which one need consider in this connection are the bones of the skull and here we must admit that neither of these peculiarly osseous diseases has any incidence at all, neither is there mobility at the sutures nor protection by any kind of an external defence. We can only fall back upon the dictum that here is an "exception which proves the rule".

The following clinical case is cited as it furnished the basis of the above speculation, for, except because of its possible value in provoking thought and investigation with respect to the various factors that may enter into the etiology of osteomyelitis, it would be, of itself, of no particular significance.

Mrs. F., a married woman of 28 years, had been complaining at intervals, for about a year, of pain in the region of the symphysis pubis. From this locality there had been an extension of the discomfort along the inner side of the right thigh. This seemed always to be associated with over-exertion. She had no injury that she recalled unless a rather hard labor, terminated by forceps delivery at the birth of her baby, one and a half years ago, may have been the equivalent of a trauma. The only sickness she had had was the "grippe", two or three years previously, and a middle ear infection shortly after, for which she had a paracentesis.

On physical examination there was very little to be seen. There was some tenderness to pressure over the symphysis pubis and she had quite regularly a degree of temperature in the afternoon of the three or four days she was under observation. Hip and spinal motions were normal. X-ray films showed a small cavity in the right pubic bone very close to the symphysis. It looked as though it would hold a small grape. About this cavity there was a certain amount of increased density of the bone as is so often observed in osteomyelitic cavities, evidently a walling-off process. It was decided to curette this cavity and at operation the area shown in the x-ray was exposed through a transverse incision, the center of which was directly over the symphysis pubis. There was not much thickening of the bone apparent. The cavity was opened with a sharp gouge. The cancellated bone was hard, whereas the medullary bone inside the cavity was soft and could easily be removed with a curette. There was nothing resembling pus. This cavity was wiped out with crude carbolic acid followed by absolute alcohol and sewed up, a rubber dam seton being left in for two days. The pathologist reported on the content of the cavity as follows: "Sections microscopically through the bone curettings present evidences of atypical repair. There are several foci of cartilage formation with beginning calcification and bone formation. Nothing found to suggest tuberculosis. Diagnosis: Inflammation and repair."

The patient made an uninterrupted recovery from the operation and though it was two or three months before she was able to resume all her home responsibilities, she reported herself by letter about nine months after the operation as perfectly well and able to do all that she had occasion to do. I obtained no culture from the cavity at the time of operation but the bacteriological observations in similar cases have almost invariably revealed a staphylococcus albus. At times one finds a small amount of frank pus, while at other times only a little detritus in the form of granulation tissue and a very small amount of blood stained serum. If left alone, the cycle is repeated again and again, as generation after generation of staphylococci come on the scene, create a little acute disturbance and then die down.

REDUCING EYE INJURIES IN INDUSTRY

C. W. PRICE

Consulting Safety Engineer, New York City

In a plant with 800 employees, 120 workmen doing grinding, chipping, lathe work, and other operations with eye hazards, received eye injuries during 1928. And then an intensive drive for safety was inaugurated in January, 1929—with the result that during 1929 only three workmen have suffered eye injuries. How was this accomplished?—goggles and education.

Each man working on grinding machines, cutting lathe, and other machines where there was any eye hazard, was supplied with goggles. Great pains were taken in the selection of the proper types of goggles, and there began the educational campaign. Monthly meetings of all employees were held, and eye hazards and eye protection were strongly emphasized.

A large blackboard, four feet by eight feet, was placed at each of the three entrances to the factory. Twice each week safety messages were inscribed on these boards in three brilliant colors of chalk and in a striking design. Here are three typical messages:

> "You don't want to peddle lead pencils on the street.—Goggles Prevent Blindness."

The design used was a large drawing of a pair of goggles.

A second message read as follows:

> "The most delicate organ in your body. One flying chip may blot out your sight.—Wear Goggles."

A drawing of an eye was used for the design.

Another message read as follows:

> "Don't try to be your own eye doctor. Dangerous infection is caused by removing particles with a toothpick, finger or handkerchief.—Refer all eye troubles to the nurse, and do it at once."

—*Bulletin National Society for the Prevention of Blindness, Inc.*

WEEKLY HEALTH INDEX

Telegraphic returns from 64 cities with a total population of twenty-nine million for the week ending March 8, indicate a mortality rate of 13.8 as against a rate of 14.6 for the corresponding week of last year. The highest rate (27.4) appears for Memphis, Tenn., and the lowest (8.2) for Dayton, Ohio. The highest infant mortality rate (170) appears for Utica, N. Y., and the lowest for Kansas City, Kans., and Lynn, Mass., which reported no infant mortality.

The annual rate for 64 cities is 13.9 for the ten weeks of 1930, as against a rate of 16.8 for the corresponding weeks of 1929.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 16121

PROFUSE HEMATEMESIS WITHOUT PREVIOUS EVIDENCE OF DISEASE

MEDICAL DEPARTMENT

An Armenian wool worker fifty-four years old entered November 17 through the Emergency Ward. The chief complaint was hematemesis of eight hours' duration. He was in extreme shock. The little history obtainable was given by a brother-in-law.

Except for a slight tendency to belching and "indigestion" after meals the patient had apparently been well until two weeks before admission. Then during a quarrel his son knocked him down, kicked him in the right flank, and stepped on his abdomen. He had felt unwell most of the time since this, though he returned to work for a day or two. For several days he had been in bed most of the time. November 16, at about noon, while on the way from Lawrence to Cambridge, he suddenly felt weak and dizzy and vomited a large amount of blood. Upon arrival in Cambridge he had further hematemesis and "looked as if dead."

Clinical examination showed a little thin, dehydrated, ghostly pale man lying on the shock table in deep shock, difficult to rouse. The skin was cold and sweating. He vomited a pint of fresh and clotted blood soon after admission. An incomplete examination showed a blood pressure of 60/40, later 50/42 and back to 60/35 toward morning. The pulse was very weak and thready, rate about 90. A nodular liver was felt upon very gentle palpation of the abdomen. There was no external evidence of trauma.

Hemoglobin 50. Non-protein nitrogen 250 milligrams. Blood sugar 25 milligrams.

Temperature 97.4° to 98.1°, rectal. Pulse 78 to 110.

The patient was kept on the shock table. Morphia was given freely. The following morning the blood pressure suddenly failed. Preparations for transfusion were made, but the patient died before the procedure was carried out.

CLINICAL DISCUSSION

BY RICHARD C. CABOT, M.D.

I think he had a perfect right to feel unwell. Can we connect this hematemesis with the late difference of opinion which he had with his son? I do not see how we can. That interval is too great. If it had happened immediately afterward we should have speculated as to some way he could have been injured. Yet even if he had come in immediately after this altercation it is hard to say how all that blood could have got into his stomach. He might have ruptured his intestine, liver or spleen, but that would not put blood into his stomach. So I cannot connect this trauma with his hematemesis. Hematemesis without previous injury usually suggests one thing. Cirrhosis of the liver is the ordinary classic diagnosis when a person comes, as we picturesquely say, with "hematemesis out of a clear sky," i.e., without previous symptoms. It is seldom due to ulcer. Ulcer usually produces other gastric symptoms before a man bleeds as tremendously as this. Splenic disease, enlargement of the spleen, is characterized sometimes by such bleeding. Blocking of the veins draining from the stomach often gives hematemesis of this kind. Armenians are prone to Banti's disease, more so than people of the nations away from the Mediterranean. So far we do not know anything about his abdomen, so I suggest that we go on to the physical examination.

NOTES ON THE PHYSICAL EXAMINATION

The blood pressure is about as low as we ever get it. The chief interest in it is as an example of what the blood pressure is in a man whose pulse is hardly palpable at all.

Non-protein nitrogen 250 is of course an enormous increase.

DIFFERENTIAL DIAGNOSIS

The record boils down to sudden hematemesis and a nodular liver with a high non-protein nitrogen. Those are the three essential facts. We should like to know about his heart, and we do not know anything about it. If that non-protein nitrogen were associated with nephritis or high blood pressure we should know it was in the heart. I have never seen such a hemorrhage as this from the stomach merely as a result of nephritis. If he has nephritis I believe that he has something else too. With a nodular liver we suspect that they had been looking for cirrhosis; and yet as I have said a number of times, I have never known the nodules of a cirrhotic liver to be felt. A syphilitic liver would go perfectly well with it, and could be accompanied by enough fibrosis and portal stasis to give us this picture. We have no other evidence about syphilis, and no evidence pointing to malignant disease. I think on the whole that some form of cirrhosis seems the most probable diagnosis, in spite of the fact that we do not usually feel the nodules in that disease.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cirrhosis of the liver.

DR. RICHARD C. CABOT'S DIAGNOSIS

Cirrhosis of the liver.

ANATOMIC DIAGNOSES

Cirrhosis of the liver.
Esophageal varices.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

This man did have a cirrhosis. The liver was approximately normal in size, weighing 1670 grams, and showed very marked fibrosis. It was nodular, the average size of the nodules varying from that of a pea to twice that size. That is of some interest, since in the typical alcoholic type of liver the nodules are always much smaller than that and are always uniform in size. Of course we have not a good history of this man, but I should be willing to bet considerably from the gross and microscopic appearances that the cirrhosis was not alcoholic in type but was toxic, of the type that follows acute yellow atrophy. He had esophageal varices. I am inclined to agree with Dr. Cabot about the nodules. They were pretty small to be felt through the abdominal wall.

DR. CABOT: Was the liver down below the ribs, Dr. Mallory?

DR. MALLORY: It was two centimeters down.

DR. CABOT: Was there anything to account for the high non-protein nitrogen?

DR. MALLORY: Nothing at all. The kidneys were negative.

DR. CABOT: I haven't known of liver disease doing a thing like that, have you?

DR. MALLORY: No.

A STUDENT: With a low blood pressure like that wouldn't you be likely to get a high non-protein nitrogen? I thought you had to have a blood pressure above 60 to get any urine at all.

DR. MALLORY: It takes three or four days of anuria to raise the nitrogen retention to such a point.

DR. CABOT: I see the point. There is so little circulation through the kidney that the kidney would not be expected to be doing much. But as Dr. Mallory says, it was a very short time to get all that change.

CASE 16122

FEVER FOR FOUR MONTHS

MEDICAL DEPARTMENT

A negro steward thirty-one years old entered December 4 complaining of aching joints of two months' duration.

For four months he had had severe night sweats at intervals of one or two weeks. Two months before admission he began to have stiffness and aching in the knee joints. Later the knees became painful enough to keep him awake at night, the muscles of the legs were aching and painful and he had fever. Two weeks after the onset he began to have attacks of nausea and vomiting, belching of gas and sour eructations, usually occurring after meals, especially when he had eaten considerable meat. Medicine given by a physician gave little relief. A patent medicine, "charcoal" pills, did give some relief. For the past ten days the night sweats had been more frequent and he had had considerable temperature, the highest 103° three days before admission. During the past five days he had had two attacks of pain beginning in his neck and spine and running up to his head, lasting about five minutes. Four days before admission he went to see another physician, who put him on a milk diet and belladonna. This also gave no relief. Three days before admission he had to stop work. Since the onset he had lost 25 pounds and considerable strength.

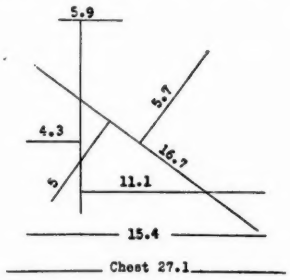
His mother died of pneumonia and heart disease.

At fourteen he was in a hospital for four weeks. This hospital reports that he gave a history of painful, tender and swollen knee joints of three weeks' duration, with fever, chilliness, loss of appetite and malaise. Later the shoulders, wrists and fingers were similarly involved. There was a soft systolic murmur at the fourth interspace at the edge of the sternum, heard with less intensity at the apex and the base. He was discharged well except for slight pains in the shoulders. A week later he reëntered with a return of the symptoms. A swelling on the sacrum was incised and a small amount of thick pus evacuated which apparently sprang from the bone. He was discharged improved in a month. Since that time his general health had been good except that he had a little palpitation at night after a hard day's work or after much dissipation. He used about a pint of alcohol a week until three months before admission, when he stopped it. Sixteen years before admission he had gonorrhea. He was treated for three weeks and discharged as cured. He was shot with shrapnel in the back in France. His teeth were very poor. For the past three weeks he had urinated eight to ten times by day and three or four times at night and had not been able to retain his urine as well as usual. Previously his urination had been normal.

Clinical examination showed a colored man with slightly pale mucosae lying flat in bed without discomfort or dyspnea. The teeth showed marked cavitation. Slight pyorrhea. Tonsils large, dull red with yellowish spots. Apex impulse of the heart forceful, with a presystolic thrill. Apex in the fifth space 10 centimeters to the left of midsternum, coinciding with the left border of dullness 2 centimeters outside the midclavicular line. Right border 4, supracardiac dullness 6.5 centimeters. A systolic murmur at the apex and the base, a diastolic transmitted

from the base down the left border of the sternum and a diastolic at the apex. Pulmonic second sound accentuated. Corrigan pulse. Artery walls slightly palpable and tortuous. Blood pressure 160/45. An electrocardiogram showed normal rhythm, rate 110, inverted TII and TIII. Slight left axis deviation. Index +30, angle —0°. Lungs, abdomen, genitals, extremities, pupils and reflexes normal. Prostate moderately enlarged. Left fundus showed an ill-defined whitish area above and lateral to the disc and two tiny red spots near this.

Amount of urine normal, specific gravity 1.024 to 1.032, a slight trace to the slightest



possible trace of albumin at eight of twelve examinations, sugar at one, 0 to 8 leukocytes at eight, 5 to 15 at two, one to occasional red cells at three, occasional fine granular casts once, coarse granular casts once. Blood: 25,200 to 14,950 to 28,500 leukocytes, polynuclears 82 per cent, hemoglobin 80 to 65 per cent, reds 4,780,000 to 3,300,000. Smear normal; no phagocytes at seven examinations. Hinton negative.

X-ray examination showed marked enlargement of the heart shadow to the left in the region of the left ventricle. (See diagram.) The curve of the left ventricle was prominent. The heart lay horizontal in the chest and had the characteristic boot shape. There was no increase in the supracardiac shadow. The aorta was not dilated in either view. The aortic knob was a little prominent.

Temperature 98.2° to 104°, with one drop to 96° December 29. Pulse 82 to 138. Respirations 19 to 37, with a terminal rise to 54.

The orders are given following the discussion.

The night of December 6 the patient suddenly developed complete left hemiplegia with left ankle clonus. His speech was thick. There was no loss of consciousness and no stiffness of the neck. The eye grounds were unchanged. During the next five days there was little or no change. He had profuse sweats without chills. December 12 he had sudden dull pain in the extreme right lower quadrant lasting three hours and a half and relieved by morphia. He had vague generalized aching and restlessness at times, and continued attacks of sweating. By December 23 he was aching all over and very despondent. The paralysis changed little after a slight initial improvement.

January 8 he was wakened out of sound sleep by a very sudden onset of dyspnea. The respirations and pulse rose. In the region of the left upper lobe there was dullness with bronchovesicular breathing, increased whispered voice and medium to coarse râles. Pallor was more evident. He had bloody sputum. January 13 he seemed more anxious and weak. The pulse was weak and rapid. The blood pressure fell to 130/40. The heart became absolutely irregular. Rapid examination of the front of the chest just before death showed bronchovesicular breathing in the left upper lung, but no râles. That day he died.

Clinical Discussion

BY A. V. BOCK, M.D., AND GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Bock: The story of night sweats gives us a leading symptom at once, and makes us think of tuberculosis, rheumatic fever or sepsis. We think of night sweats as meaning tuberculosis, but they occur also in other chronic fevers.

The description of the illness two months before admission is not sufficient to enable us to make a diagnosis of rheumatic fever.

One would like to know more about his general habits, the details of his diet and the times at which he had taken his meals in order to evaluate the history of attacks of nausea, vomiting, belching of gas and sour eructations.

We use "charcoal" occasionally in cases of excess amounts of gas in the intestine. It is an old-fashioned remedy and at times does some good.

I can make nothing of those two attacks of pain during the past five days except as a manifestation of the various types of bizarre symptoms very sick patients have.

All we can say from the history is that the man has an infection, a very active infection, and that so far as we have gone it may be tuberculosis. But there is not enough told us about it to make a positive diagnosis of any disease.

The history of his illness at fourteen is unusual, because in our experience rheumatic fever in a negro is not a very common thing. As a matter of fact I have not seen any sueh patients here. But that is not surprising, because we have a very small number of negroes in this clinic. That soft systolic murmur may mean nothing at all. I cannot connect the infection of the sacrum with the rheumatic fever in any way except as a manifestation of his general loss of resistance to any infection, and then as a purely secondary event.

It is strange that all the patients stop drinking just before they come into the hospital. They give these definite dates, two months, three months or even a whole year before they come in.

This next symptom, frequency of urination, has a great many causes. We are dealing with a sick man and it is a little difficult to assign a definite cause for it. It could be due to the fact

that the water intake was very small and he had highly concentrated urine, producing frequency. He may have had cystitis. He may have had a prostatitis, a flare-up of his old gonorrhea. A cause of frequency without very much in the urine to account for it is tuberculosis of the kidney. Certainly that is a diagnosis to remember as a cause of frequency, especially after it has gone on for a good many months with very little else in the picture.

NOTES ON THE PHYSICAL EXAMINATION

In view of the story at the age of fourteen one would suppose the tonsils would have been removed, since we believe so strongly that the tonsils are the common portal of entry for this type of infection, rheumatic fever and the subsequent events, bacterial endocarditis, and other types of infection. I suppose the tonsils are most often the portal of entry for infectious arthritis.

Mitral stenosis with a rheumatic heart,—we will say rheumatic heart chiefly because of the history of his having had rheumatic fever at the age of fourteen years, and at thirty-one years of age having a mitral stenosis and aortic regurgitation. Without the history of rheumatic fever, even without tonsillitis we make the diagnosis characteristic of this type of heart, rheumatic heart disease.

He is a young man to have tortuous arteries, but the life he has led up to this time is probably largely responsible for this premature type of arteriosclerosis.

The blood pressure fits in with the lesion of aortic valve regurgitation.

Inverted T$_{II}$ is not an uncommon finding in aortic valve lesions or lesions of the aorta as well as in myocardial lesions. The note here about slight left axis deviation interests me, because one can have very marked hypertrophy of the left ventricle without axis deviation, as in cases of essential hypertension. If left axis deviation signifies left ventricular hypertrophy, such cases should show it. I have seen one or two patients with maximal hypertrophy of the left ventricle who did not show the slightest evidence of deviation. In this case it may be balanced by some right sided hypertrophy of the heart if the patient has a mitral stenosis. I have gathered from the signs here that he has.

What do you think those red spots on the fundus are?

A STUDENT: Petechiae.

DR. BOCK: If they are petechiae we shall have to go a long way to exclude what diagnosis?

A STUDENT: Subacute bacterial endocarditis.

DR. BOCK: The urine shows very little that one cannot explain in a man having fever and the reaction that he has.

The white count is rather high, especially if one makes a diagnosis of subacute bacterial endocarditis. I have seen a patient run a whole course of weeks and weeks with typical bacterial endocarditis and no elevation of the white counts and with a good many ups and downs in the counts.

Phagocytes are very large cells. We see phagocytes enclosing one, two, or three red cells or an occasional one containing a leukocyte or lymphocyte. I used to think they occurred only in terminal stages of bacterial endocarditis, but they may be found four, five or six months before the death of a patient.

The X-ray examination showed a normal aorta with a large ventricle and the typical left ventricular curve of hypertrophy. If the aorta were widened here a little bit more it would be a classical syphilitic heart. But the history that we have and the fact that there is no dilatation of the aorta does not quite fit the picture of syphilitic heart.

What do you think happened to him when he suddenly developed hemiplegia?

A STUDENT: He had an embolus from the heart.

DR. BOCK: With the petechiae in the eye this event goes a long way to confirm the diagnosis of subacute bacterial endocarditis.

What do you suppose was the origin of the pain in the right lower quadrant of sudden onset?

A STUDENT: Infarct of the kidney.

DR. BOCK: It was too low for infarct of the kidney. In infarct of the kidney the pain is usually referred to the flank or back.

A STUDENT: It might have been mesenteric thrombosis.

DR. BOCK: We have not much to back up that diagnosis. It is very hard to say what the origin of that pain was. He may have had an embolus somewhere in that region, I cannot say where with this amount of information.

He had bloody sputum. What does that suggest?

A STUDENT: Infarct of the lung.

DR. BOCK: It is a very characteristic story of embolus of the lung,—pain, cough and bloody sputum. That is generally the way the thing evolves. The question now is, where is the seat from which that embolus sprang?

A STUDENT: He had sharp pain in the right lower quadrant. May that not have been due to thrombosis of the mesenteric vein from an embolus sent down there from the right auricle?

DR. BOCK: Why would you suspect embolus from the right auricle?

A STUDENT: That is the place where the blood is stagnant.

DR. BOCK: We have no reason to assume in this case that his blood was stagnant in the right auricle, and we know that lesions of rheumatic fever and bacterial endocarditis are very rare on the right side of the heart. I think it is likely that the embolus sprang from phlebitis. I am not prepared to say what vein the phlebitis is in.

I should say the diagnosis of this case comes down to rheumatic heart disease with aortic regurgitation and mitral stenosis, bacterial endocarditis, cerebral embolism, pulmonary embolism

and phlebitis in some one of the large veins. The iliac veins for example are occasionally sites for phlebitis giving this type of embolus.

A STUDENT: Do you think that aortic regurgitation due to enlarged valve ring came on long after his attack at fourteen and the valve had ulcerated through? Early we have no signs of regurgitation.

DR. BOCK: We have no history of cardiac involvement at that time except for the note at discharge from the hospital, and we have no note from that time until he comes in with a history that looks like bacterial endocarditis. Rheumatic lesions may be slowly progressive things. When he left the hospital he had just one small murmur. He may have been discharged with active infection still going on and the process of endocarditis not completed. It is a very difficult problem as to when to permit a patient who is convalescing from acute rheumatic fever to be up on his feet. Swift and Miller* of the Rockefeller Institute hold that the proper criterion is the level of the white count. As long as the leukocytosis persists the patient should be kept in bed. If he is not, there is likelihood of precipitating a fresh rheumatic infection of the valves or starting up bacterial endocarditis. You know that when we give sodium salicylate it is to allay the pain, giving the patient a marked sense of relief. The temperature comes down in forty-eight hours as a rule, and as long as the salicylates are continued the patient does not have any fever. We do not believe salicylates have any effect on the course of the infection. The symptoms are relieved, but the infection is going on. The only evidence of the activity of the infection may be the level of the white count. This boy may have been allowed to go with more or less active infection still going on. I should feel that the bacterial endocarditis is without question implanted upon formerly damaged valves as a result of his earlier rheumatic fever. This is the usual condition with this type of heart.

A STUDENT: Could it be gonococcus infection?

DR. BOCK: There are very general joint symptoms for gonococcus. It is conceivable, though I do not think it is very likely.

DR. HOLMES: Unless the transverse diameter in the anterior-posterior view is over 6 centimeters we rarely have a dilated aorta. The measurement of the great vessels here is 5.9. If we went down a little lower we could probably make it 6. This is not a very accurate measurement; but I think it very unlikely that the patient has a dilated aorta. We can be sure he did not have real dilatation from aneurysm. We cannot be sure of the oblique diameter here because the edge of the aorta is not very well shown. But I think we have sufficient evidence in this case to say no dilatation of the aorta. Then we have the characteristic goose-shaped heart with hypertrophy of the left ventricle without much evidence of change in the other chambers. The enlargement could be due to aortic regurgitation or high blood pressure. His aorta is just a little prominent in the region of the knob. We have nothing in the X-ray examination to distinguish between aortic regurgitation and hypertrophy. I can say that if he has aortic regurgitation it is probably rheumatic and not luetic. If it were luetic one would expect to find some changes in the aorta. That does not always hold true, but it does in a fair percentage of cases. Without dilatation of the aorta and a characteristic aortic-shaped heart I feel justified in saying rheumatic heart disease.

*A. F. Swift, C. P. Miller and R. H. Boots. The Leukocyte Curve as an Index of Infection in Rheumatic Fever. Jour. Clin. Investigation, 1: 197, December, 1924.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Rheumatic heart disease, aortic regurgitation with mitral stenosis and regurgitation.
Subacute bacterial endocarditis.

DR. A. V. BOCK'S DIAGNOSES

Rheumatic heart disease with aortic regurgitation and mitral stenosis.
Bacterial endocarditis.
Cerebral embolism.
Pulmonary embolism.
Phlebitis.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Bacterial endocarditis, aortic and mitral valves.
Chronic rheumatic endocarditis, aortic and mitral valves; aortic regurgitation.

2. *Secondary or terminal lesions.*

Hypertrophy of the heart.
Infarcts in the spleen and kidneys.
Multiple areas of softening in the brain.
Passive congestion of the lungs.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

This man had bacterial endocarditis on both his aortic and mitral valves and evidence of old rheumatic involvement of both valves. The mitral valve did not show any significant amount of stenosis, though it was considerably thickened and fibrosed. The aortic valve showed moderate rolling in of the edges which I think in itself of sufficient degree to give regurgitation. It also showed some ulceration of two of the cusps. Besides the cardiac findings we found infarcts in the spleen and kidneys and multiple areas of softening in the brain. We did not find any infarcts in the lungs and no explanation of the sudden attack there. We had no explanation of the pain in the right lower quadrant.

DR. BOCK: There was no phlebitis?

DR. MALLORY: Certainly not within the abdominal veins. We did not dissect the legs.

A STUDENT: Was there no pneumonia?

DR. MALLORY: Nothing except passive congestion.

DR. HOLMES: Was the enlargement of the heart confined to the left ventricle?

DR. MALLORY: There was marked left ventricular hypertrophy. The wall measured 21 millimeters in thickness, 70 per cent above normal. There was slight enlargement of the right ventricle, not marked.

ORDERS

December 4. Bed. Soft bland diet. Fluids forced to at least 120 ounces. Salicylates gr. xx hourly when awake until tinnitus or nausea; then gr. xx t.i.d. Magnesium oxide gr. xx p.r.n. Luminal gr. iss s.o.s.

December 6. *Absolute rest.* Morphine gr. 1/6 s.c. immediately and repeat p.r.n. for restlessness unless respirations below 18.

December 7. Luminal gr. iss at bedtime.

December 11. Veronal gr. v at bedtime.

December 12 to 16 and 21 to 23 inclusive. Morphine sulphate gr. 1/6 s.c. daily.

December 21. Opium suppository gr. ½.

December 24. Deodorized tincture of opium minims x t.i.d.

January 3. Pantopon gr. 1/6 s.c. and repeat in 4 hours if necessary.

January 6. Morphine sulphate gr. 1/6 s.c. and repeat once if necessary.

January 7. Codein gr. ss by mouth every 3 hours p.r.n. for any restlessness or pain. Massage both legs p.r.n. for aches.

January 8. Atropin gr. 1/150 by mouth at bedtime.

January 8 to 11. Codein gr. ss by mouth. Morphine gr. 1/6 s.c. immediately and repeat once if necessary for discomfort.

January 12. Morphia gr. 1/6 with atropin gr. 1/150 s.c. Order repeated.

January 13. Morphia gr. 1/6 s.c. p.r.n.

NOTE BY DR. BOCK

The outline of treatment as given shows clearly that the Medical service had no specific therapy to offer. Given a case of subacute bacterial endocarditis, we can provide little except good general supportive treatment, a bland diet, fluids, sedatives, care of the bowels and good nursing care. Salicylates are indicated for joint pains such as this patient had. Transfusions of immune blood, intravenous use of merurochrome and other drugs, and X-ray treatment have failed to produce results. Rarely a recovery has been reported without any attempt at specific therapy, but as a rule a fatal termination is to be expected.

THE NORTH SHORE BABIES' HOSPITAL

One of the outstanding steps in the progress of the North Shore Babies' Hospital, which is located in Salem, Massachusetts, during the past year was the complete remodeling of the Food Room together with the furnishing of new equipment. These improvements and additions have been made possible through the generosity of Mr. Elmer A. Cowdrey of Peabody and Mr. C. B. Barton, Jr., of Brookline, executors of the discretionary fund created by the will of the late Colonel David Lyman Jewell of Quincy. This is the second time the Babies' Hospital has been benefited through this fund.

The Food Room is equipped with an electric refrigerator, a double dietitian's porcelain sink, a utility table, bottle sterilizer, gas stove, and a special formula table which is used for the purpose of mixing milk. The room is also tiled throughout.

Three pupils, who are under the close supervision of a graduate nurse, are on duty in this room continually. It is in this department that the young nurses are trained in preparing formulae as well as cooking simple foods for children.

Last year the records show 67 babies were treated free at the Babies' Hospital; 193 paid part, and 16 paid full board. There were 31 private patients. The total number treated during the year, including some left over from last year, was 334. The patients come from 27 different towns and cities of the North Shore District.

Representative Bayard Tuckerman, Jr., of Hamilton, is the President of this institution.

RABBIT INSPECTION SHOWS NO TULARAEMIA

The extensive investigations made by Francis and others concerning tularaemia have shown that this disease is found in almost all parts of the United States except perhaps in the New England States. Since one of the chief sources of human infection appears to be wild rabbits, the Department has repeatedly been asked as to the danger from the use as food of rabbits purchased in the New York markets.

Recently an inspection was made by a veterinarian of the Department of Health accompanied by an inspector of the United States Department of Agriculture, the inspection embracing all rabbits received for food purpose at all the wholesale markets, railroad terminals, storage and refrigerating plants in this city. The shipments examined varied from a basket of ten pair to one consisting of 92 barrels, each barrel containing forty pair, and came to this city from Kansas, Illinois, Idaho and Missouri. At every place visited an anatomical examination was made of at least six rabbits.

All of the animals examined were found to be sound, wholesome and free from disease. In a similar investigation made by Francis some years ago in Washington a considerable number of rabbits were discovered infected with tularaemia.—*Bulletin N. Y. City Health Dept.*

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AN AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

FOR some time there has been growing the feeling that the practice of specialties should be limited to those who are especially qualified. That "there ought to be a law about it" is the first reaction. But the absurdity of such efforts at regulation was apparent at once to those who were most keenly interested and who were best informed as to the seriousness of the situation which had arisen (the specialists themselves). Non-governmental control and the gradual building up of an educated public opinion is more in consonance with professional tradition and steps in these directions have been taken by a number of national specialist societies.

The latest organized effort is now in the making and the participating groups are the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, the American Gynecological Society, and the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association. The Examining Board is to consist of three representatives and examiners from each of these groups and as soon as they are elected the Board can be organized and begin to function. The representatives of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons have been already elected.

The chief purpose of this movement can be accomplished only indirectly. No direct control can be exercised over those who are not examined and whose qualifications are not certified. But there will be promulgated effectively the view that no physician should claim to be a qualified specialist in obstetrics and gynecology until some competent authority has certified his qualifications.

It does not mean that the practice of obstetrics, for example, will be restricted to holders of certificates from the Board. But it does mean that in time, qualification for specialization in obstetrics will have to be more than the mere statement on the part of the physician that he considers himself to be so qualified.

It is to be hoped that within the year the Board can begin its important work.

IS THE CONTROL OF CANCER IN SIGHT?

THIS question is raised because of an alleged statement by Dr. Joseph Colt Bloodgood of Johns Hopkins University made in Jacksonville, Florida, March 2, that the control of cancer may be in sight. He spoke of nine recent developments on which he founded his belief which are as follows: Reorganization of the American Society for the Control of Cancer; evolution in the attitude of the daily press "to an appreciation of their responsibilities and opportunities"; coördination of departments of health and the medical and dental professions; special instructions in primary schools; prospective passage of three bills before Congress; prospects for coöperative cancer research; public enlightenment about preventive medicine; entry of preventive medicine into the curricula of medical schools, and plans for enlarged medical journals to spread details of technique among physicians.

The report also states that there is a plan underway to furnish the press with statements authorized by "thirty members of the board of trustees of the American Society for the Control of Cancer by the American Medical Association and the American Colleges of Physicians and Surgeons."

This is most interesting and if true will give to the world the facts which are recognized by competent observers. Everybody will be intensely interested in reports by such representative persons in the field of research. Much has been learned about cancer and its appropriate treatment in the last decade. We hope that Dr. Bloodgood has been correctly reported and if this great mystery of cancer is about to be solved one of the greatest blessings will have been conferred on the human race.

HEALTH WORK

A LETTER appearing on page 599 of this issue presents a subject of importance to all concerned in the problems incident to the relation of practitioners of medicine to so-called health work by individuals or organizations.

Our correspondent makes certain assertions throughout his letter which are sound and generally accepted but in some instances his statements seem to be open to difference of opinion. For example we have not seen any general evidence of adverse criticism of professional advice to the laity or indisposition to advise lay organizations if that is implied in the reference to mothers' meetings and it seems almost puerile even to suggest that the work of lay organizations interested in health work if properly guided by scientific members should be avoided. We will leave to the Chairman of the Committee on Ethics a reply to the specific questions submitted to him in the letter although the answer seems to be obvious.

We do not subscribe to the allegation that the medical profession is antagonistic to health work in schools, social service work or our public health service. We are aware of differences of opinion with respect to certain aspects or the behavior of individuals in connection with these activities, but that there is any approach to general antagonism seems to us to be untrue.

The vice-president who couldn't "put over a health program" for operatives must have been unfortunate in his relation to a certain doctor or group. This work is being done regularly and efficiently in many places and without any infringement on medical ethics.

We suspect that if health programs have been blocked by physicians that there may have been an unfortunate approach to the parties in interest, and we believe that a doctor can engage in health work either as an individual or in association with other doctors without being labelled as a "pariah" or being in danger of incurring disciplinary action by any official body. It is, we believe, a legitimate and useful function of the doctor if he has due regard to the time, place and his own behavior. The education of the laity is now generally believed to be one of the important functions of medicine and the practitioner who fails to contribute his part in this movement is indifferent to one of his important duties. We would like to have it shown that any doctor meeting his obligations in this respect would suffer in the estimation of those who are competent to judge of the essential qualities of ethical behavior. If this should be attempted we would take occasion to comment on such expressions. We pity the man whose courage is of such a negative quality that he does not dare to engage in health work. If it is done in harmony with the principles of medical ethics we believe that he will earn the commendation of the profession.

We deplore this attack on the "medical profession" which is a jumble of accepted truths obscured by irrational application. We are sincerely sorry that a well-meaning high-minded practitioner with an earnest desire to serve the people should not have clearer vision with respect to his relation to one of the important fields in which medicine can accomplish much in promoting personal and public health.

We venture to suggest to the writer of the letter that if he will call into consultation a few of the officers of the Massachusetts Medical Society he will be convinced that his criticisms are not well taken and that there are methods by which he can carry on that form of medical practice which includes advice designed to enable a person to maintain health as well as to overcome disease without danger to his peace of mind.

THE CAMPAIGN FOR FUNDS FOR THE BOSTON MEDICAL LIBRARY AND THE MASSACHUSETTS MEDICAL SOCIETY

THIS drive has entered upon its second stage. The organization of this movement was designed and directed by the Fiscal Service Corporation and has been carried on until March 1. Under the guidance of this corporation those interested in calling the attention of the medical profession to the necessity of meeting the needs of the Library and the Society joined committees and went to work. Great difficulties were encountered consisting of competing appeals, the influenza epidemic of the latter part of 1928 extending into 1929 and later the financial panic together with unsatisfactory business conditions.

Even with these inhibiting influences over two hundred thousand dollars has been secured. This large amount is a tribute to the courage of the committee in charge of the details of the scheme. Although the objective of six hundred and fifty thousand dollars is not in sight the determination to achieve success is as definite as in the beginning.

The encouragement of Dr. Vincent in the early stages and the stimulation of Dr. Welch by his recent visit have been inspiring influences.

The committee in charge has learned the methods which must be employed and stands committed to the prosecution of the campaign and will now continue its work.

Early success will depend upon more general support by the medical profession. A considerable proportion of the members of the Society has contributed money and secured funds from personal friends.

The question ought to be considered by every member of the Massachusetts Medical Society as to whether full responsibility has been recognized and met, for it has been apparent that even some physicians have not fully appreciated the importance of this great library in its educational influence upon the practice of medicine and its power in coördinating allied interests in the service of mankind.

We have here one of the greatest and most valuable medical libraries in the world and the Massachusetts Medical Society is one of the influential organizations in the medical world. Together they can accomplish much more than either working independently.

The mental vision of the founders of both of these organizations should permeate the present-day profession.

May we not ask ourselves whether those who have given have done all that is consistent and are there those who have not felt moved to contribute who may now come forward and stand with the sponsors of this endeavor? If unable to give more or to give at all, may we not ask those who often respond to appeals to unite with us in this campaign?

The *Journal* publishes on page 596 a statement enumerating some of the treasures now in the keeping of the Library. Visits to the Library will stimulate interest.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

CLIFTON, HARRY C. M.D. University of Pennsylvania School of Medicine 1901. F.A.C.S. Surgeon, St. Francis Hospital, Hartford, Conn. Consulting Surgeon, Manchester and Bristol Hospitals. Address: 30 Farmington Avenue, Hartford, Conn. Associated with him is:

LANDRY, BENEDICT B. A.B., M.D. Harvard 1920. Assistant Surgeon, St. Francis Hospital and Municipal Hospital, Hartford, Conn. Address: 30 Farmington Avenue, Hartford, Conn. Their subject is: "The Biliary Tract." Page 559.

PHANEUF, LOUIS E. Phm.D., Ph.C., M.D. Tufts College Medical School 1913. F.A.C.S. Professor of Gynecology, Tufts College Medical School. Chief of Service, Department of Gynecology and Obstetrics, Carney Hospital. Obstetrician-in-Chief, Malden Hospital. Consulting Gynecologist, Beth Israel Hospital; Leonard Morse Hospital, Natick; Henrietta D. Goodall Hospital, Sanford, Maine. Consulting Obstetrician and Gynecologist, Fall River General Hospital, Fall River, Mass. His subject is: "Myomectomy During Pregnancy. Report of Case." Page 565. Address: 270 Commonwealth Avenue, Boston.

WHEELER, BANCROFT C. A.B., M.D. Harvard 1924. Assistant Resident Surgeon, Peter Bent Brigham Hospital, 1927-1928. Assistant Visiting Surgeon, Memorial Hospital, Worcester. His subject is: "Essential Hematuria: The Pathology of the Renal Pelvis in Five Cases." Page 566. Address: 27 Elm Street, Worcester.

NAURISON, JAMES Z. M.D. Tufts 1909. Attending Physician, Mercy Hospital, Springfield. Address: 174 State Street, Springfield. Associated with him is:

MILLMAN, MAX. A.B., M.B., D.N.B., M.D. Boston University School of Medicine, 1926. Address: 115 State Street, Springfield. Their subject is: "The Use of Non-Specific Protein Therapy in General Practice." Page 573.

BROOKS, PAUL B. M.D. University and Bellevue Medical College 1903. Connected with the State Health Department of New York for fifteen years. Now Deputy State Health Commissioner of New York. His subject is: "Essentials vs. Non-Essentials in Milk Sanitation." Page 582. Address: State Department of Health, Albany, New York.

PAINTER, CHARLES F. A.B., M.D. Harvard 1894. His subject is: "Brodie's Abscess in a Pelvic Bone." Page 585. Address: 520 Commonwealth Avenue, Boston.

The Massachusetts Medical Society

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The Posterior Occiput

This position is considered potentially dangerous to both mother and child. If it is not recognized until late in labor, and necessity for delivery is apparent it may require considerable manipulation with risk of damage to soft parts and baby.

The mechanism in occiput posterior positions is less favorable than in anterior positions. Flexion is usually less complete than in the anterior positions until descent has taken place. Rotation to the front is through three-eighths of a circle. In four per cent. of posterior positions according to Galabin, the occiput either fails to rotate or rotates backward. In many cases the vertex becomes extended so that the engaging diameter is occipito-frontal (11.25 cm.) and the sinciput is lower than the occiput. If backward rotation takes place, the occipito-frontal (11.25 cm.) diameter presents at the outlet instead of the sub-occipito-bregmatic (9.5 cm.) as in anterior positions.

The completion of labor is delayed 3¼ hours in primiparae and one hour 50 minutes in multiparae (Varnier).

It is agreed that the early recognition of the posterior occiput is the secret of successful management.

At the onset of labor attempts may be made to rotate into an anterior position by abdominal manipulation and if successful to maintain the anterior position with a pad under a binder. The writer has had but little success with this maneuver. Fortunately in the majority of cases internal rotation occurs normally and nothing is required.

When interference is necessary, in many cases it is possible to rotate manually at least to a

transverse position and usually to an anterior. The head is seized with four fingers over the posterior ear and the thumb over the anterior ear and rotation attempted. At the same time it may be possible to swing the shoulder towards the mid-line by pressure with the free hand on the abdomen. If the head slips back DeLee recommends holding it forward by a bullet forceps attached to the scalp in the neighborhood of the small fontanel.

Rotation with forceps is favored by Bill who described his method at the Massachusetts Medical Society Meeting in Worcester in 1928. He advocates flexion and rotation above the pelvic floor. Only when rotation is complete is traction employed. For the high posterior positions he advocated version.

In the one to two per cent. of posterior positions that cannot be manually corrected, Williams in his textbook advocates the Scanzoni operation. This double application of forceps, applied to the head on the pelvic floor is combined with traction, and unless skillfully done—may produce deep tears. Its results, however, are much better than delivering the head with the occiput posterior.

The Kjelland forceps have been advocated by several writers and for the high posterior head the writer gives them preference.

Whichever method is chosen the result depends upon the skill and gentleness of the operator, otherwise it may be essentially a craniotomy done with the wrong tools.

Questions of a similar nature to the above will be discussed in the *Journal* each week. They may be addressed to the Clerk of the Committee in care of the *Journal* and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

MISCELLANY

NOTES FROM THE CHILDREN'S BUREAU

The Children's Bureau of the United States Department of Labor has recently made several announcements on Child Welfare topics.

The keynote for the next national May day child-health celebration will be parent coöperation in community child-health and protection. The American Child Health Association has prepared a list of suggestions for programs.

Tennessee is the first state selected by the Commonwealth Fund for carrying out its new rural health project in coöperation with state health departments. Gibson County in the western part of the state is one of the two counties in which field work will be developed. Vanderbilt University is to receive a grant for the development of the teaching of preventive medicine, and the University of Tennessee will be given funds to organize training courses for teachers in health education.

The National Bureau of Casualty and Surety Underwriters has offered a graduate fellowship of $1,000 for a study of home safety for the academic year 1930-1931. It is open to students at any university having a properly qualified home-economics department, who expect to complete work for the doctor's degree within the academic year.

A grant of $33,000 from the bureau of social hygiene of the Rockefeller Foundation to the National Probation Association is to be used for an intensive two-year study of the methods of detaining children and minors who are cited to appear before the courts. An investigation of all types of detention care—in jail, private institution, detention home, and boarding home—will be made in selected rural, suburban, and urban areas, among which will be included some localities without special detention care. An intensive case study will also be made in certain communities having well-organized detention homes.

BOSTON MEDICAL LIBRARY

The Boston Medical Library, organized in 1875, is the fourth largest medical library in the United States, having over 153,000 volumes and 100,000 pamphlets. It enjoys an international reputation and its scheme of classification has been adopted by the Medical Library Association of America as the standard for libraries in the United States. This classification scheme is used in many libraries in this country and abroad. The library is operated as a free public reference medical library, serving all of the New England States and Eastern Canada. It is open to all persons at any time during library hours without discrimination as to race, creed, color or medical belief. It occupies its own building at 8 The Fenway, where may be seen many interesting things having to do with the medical history of Boston from Colonial to the present time. Worthy of mention are the receipt book of Governor John Winthrop of Massachusetts Colony, dated 1843, the Hartshorne Diary of 1752-1756, the early inoculation and vaccination records of Boston and the records of the Milton Committee on vaccination, the Thacher Broadside, 1677, which is the first medical publication to be printed in the United States and also the first medical book printed in Boston in 1708. One must also see the scalpel which did the first operation under ether at the Massachusetts General Hospital and the well-known painting of the first operation under ether by Robert Hinckley of Washington. Oliver Wendell Holmes was the first President of the Library, and the Library owns a very large collection of the works of Dr. Holmes as well as a large collection of pictures of the Doctor. The library has the third largest number of medical incunabula in the United States and Canada, now totaling 246 separate works. It is also rich in the medical classics of the sixteenth and seventeenth centuries, due largely to the Bullard collection.

Are we doing our part to support this unusual institution?

HEALTH OF OUR GREAT CITIES

How the health of the City of New York, with its great size and heterogeneous population, compares with that of certain other large American cities is shown in the following table as of 1928, the latest year for which the figures are available.

The general death rate given in this table is the so-called "crude death," namely, the number of deaths from all causes per 1,000 of population. Crude deaths are not comparable, for they are largely influenced by the age composition of the population. The infant mortality rates, however, based as they are upon 1,000 births, are entirely comparable. The figures show that, in New York, out of every 1,000 babies born in 1928, sixty-six died during the first year of life. In 1929, this rate was reduced to fifty-nine, a remarkable showing for a city of more than 6,000,000 people.

The Health Commissioner points out that in 1928 New York had the highest death rate it had known since 1919, which, he says, was due to an epidemic of measles and an outbreak of influenza, the latter bringing a large increase in deaths of children under 5, and of persons more than 45.—Article on Health of New York by Shirley W. Wynne, M.D., Commissioner of Health, New York, in *N. Y. Times*, March 9, 1930.

Cities	Population	Births	Deaths	*Birth Rate	*Death Rate	†Infant Death Rate
New York	6,017,700	126,332	78,091	21.00	12.98	65.54
Chicago	3,157,400	65,724	39,562	20.82	12.53	57.28
Philadelphia	2,064,300	36,903	26,930	17.88	13.05.	70.59
Detroit	1,378,900	32,421	16,061	23.51	11.65	77.39
Los Angeles	1,200,000	17,758	13,557	14.79	11.29	64.59
Cleveland	1,010,300	17,929	10,344	17.74	10.24	60.18
Baltimore	830,370	16,338	11,929	19.06	14.36	79.26
Boston	799,200	18,751	11,563	23.46	14.47	77.11
Pittsburgh	673,800	15,129	10,095	22.45	14.98	76.75
San Francisco	670,000	8,171	8,274	12.19	12.34	45.65
Milwaukee	560,000	12,495	6,115	22.31	10.92	67.70
Buffalo	555,000	12,079	7,449	21.73	13.40	74.01
Washington	552,000	8,994	7,239	16.29	13.11	64.71
Newark	474,000	9,802	5,735	20.68	12.10	63.66
Minneapolis	455,900	8,348	4,946	18.31	10.85	51.02
Cincinnati	413,700	9,028	7,583	21.82	18.33	85.73
Seattle	383,200	4,993	3,985	13.03	10.40	42.66
St. Paul	298,000	5,112	3,044	17.15	10.21	53.99
Providence	274,400	5,939	3,517	21.64	12.82	63.30

*Per 1,000 population. †Per 1,000 live births reported.

LEPROSY IN THE UNITED STATES

Incredible though it may seem a recent report by the U. S. Public Health Service reminds us that leprosy, one of the oldest diseases of which authentic medical knowledge is available, has been throughout history one of the least understood and most maligned.

While it is undoubtedly true that leprosy is an infectious, slightly contagious disease of unknown means of transmission from person to person, and while untreated and uncared for lepers almost inevitably progress to repugnant pictures of suffering and mutilation, it has remained for the last few decades to allay, to some extent, the frank terror which the word "leprosy" strikes upon a neighborhood.

Until comparatively recent years, the aphorism "Once a leper, always a leper" was sufficient to quench all hope in the afflicted and to bring consternation to family, friends, and community. Within a generation, however, improved therapeutic measures and more concentrated and national consideration from scientists have led to the conclusion that the lot of a leper is not necessarily hopeless, and each year increasing numbers of patients are being discharged from leprosariums either as "cured", or are paroled as no longer a menace to public health.

As research has continued, a more nearly humane view is being taken of the relative danger of leprosy in a community. That some danger exists, must be admitted; for "leprosy begets leprosy"; that the danger justifies the terror which sometimes pervades a neighborhood upon the public announcement of the discovery of a leper cannot be admitted.

Barely fifty years ago, the discovery of the causative agent of leprosy, the "leprosy bacillus", by the Norwegian scientist, G. Armauer Hansen, cleared the way for removal, from the sufficiently evil name of leprosy, of a number of similar but essentially different diseases; and the diagnosis of leprosy today is rarely made, even by an experienced physician, until the leprosy bacillus has been found in the suspected patient. Leprosy as it is now recognized differs in no important respect from true leprosy of centuries past, save that by differentiation from unrelated diseases a clearer conception of the disease has been obtained.

The origin of leprosy in the United States has not

been conclusively demonstrated. No evidence of its existence prior to the arrival of Columbus has been found in the North or South American continents. The disease appears to have manifested itself almost coincidently with the early settlements and to have, in a measure, progressed with them.

Cartagena, a port of what is now the territory of the Republic of Colombia, was the center of the slave markets of the Spanish Main; conceivably, therefore, this port should soon have become a focus of leprosy on the continent, and it was in Cartagena that, early in the seventeenth century, the first leprosarium of the New World was established; the first leper of sufficient prominence to receive mention in the history of the New World however was Gonsalo Jimenez de Quesada, the founder of the city of Bogota, Colombia, who was declared a leper in 1573.

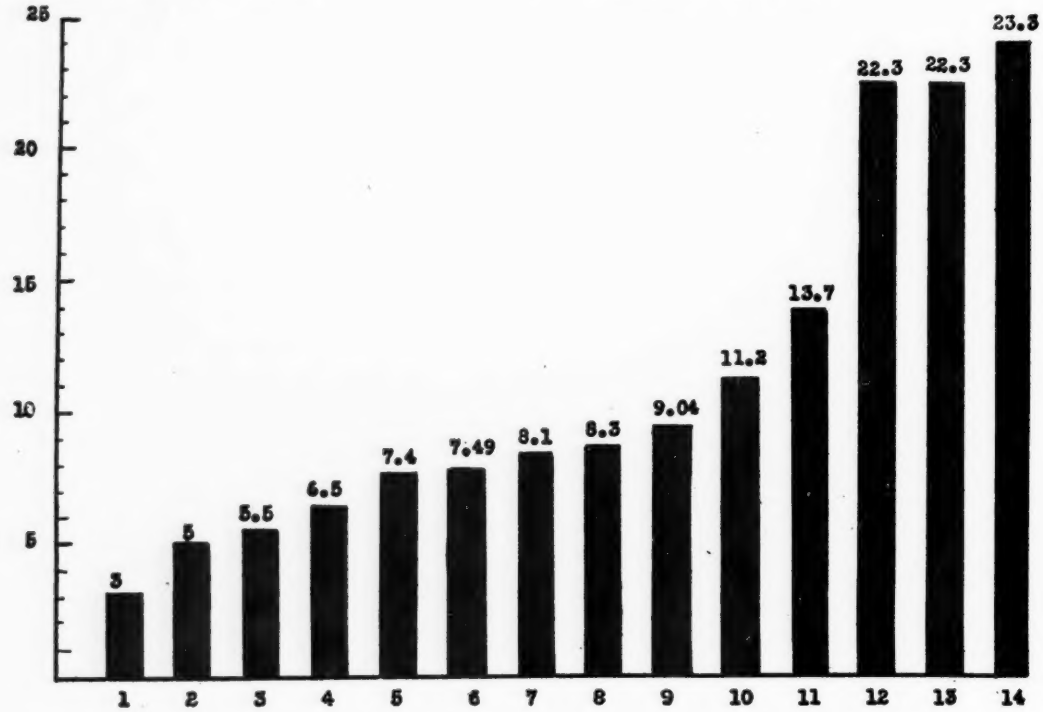
Similarly, New Orleans, which became an important center in slave traffic, also became an early focus of leprosy, and it is of interest that in 1778 the disease was considered of such importance as to require the construction of a special hospital for the exclusive care of leprous patients. "There being a number of persons in the province afflicted with leprosy, the Cabildo erected a hospital for their reception, in the rear of the city, on a ridge of high land, between it and the Bayou St. John, which is probably the ridge anciently separating the waters of the Mississippi from those of Lake Ponchartrain". As the settlers, and later commerce, proceeded up the Mississippi Valley, leprosy seems to have followed, slowly but inexorably; a current map of old and recent leprous foci shows the affected towns spreading fan-like above New Orleans.

Not all of the present day indigenous leprosy in the Valley can be properly charged to slave traffic; some lepers probably were among the early voyagers. It seems not illogical to include as propagators of the disease, certain French settlers who came from the Province of New Brunswick, Canada, in 1765 and established themselves in Louisiana. Tradition, if not history, traces leprosy in New Brunswick to a French vessel which had been to the Levant trading and which was wrecked at the mouth of the Miramichi river in 1758. It is said that infected clothing was distributed among the fishermen, and that the vessel had Lascars or some Orientals among her crew who were leprous. Some of the Acadian families were known to have been leprous as early as 1815. Several Louisiana families, directly descended from the Acadians, continue to be afflicted with leprosy.

Another focus of leprosy was established in the Great Lakes region by immigrants from Norway and Sweden. This focus, which, in 1897, numbered 168 cases, has gradually dwindled to an insignificant number.

EXTENT OF SYPHILIS IN PREGNANCY

PER CENT. OF WOMEN WITH SYPHILIS IN PRENATAL CLINICS, BASED ON 14 STUDIES OF A TOTAL OF 58,000 UNSELECTED CASES IN 30 CLINICS



1. A. C. Beck, Brooklyn, N. Y., studied 1,000 consecutive deliveries previous to 1921 of which cases 3% were syphilitic. (*Journal American Medical Association*, August 6, 1921.)

2. S. A. Gammeltoft, Copenhagen, Denmark, found 5% of 23,383 pregnancies from 1912-1916 syphilitic. (*American Journal of Obstetrics and Gynecology*, June 1928.)

3. E. C. Sage, Omaha, Nebraska, found 5.5% of 1,200 pregnant women syphilitic. Also of 118 stillbirths. 23.8% were due to syphilis. (*Nebraska State Medical Journal*, Nov., 1928.)

4. G. H. Dodds, Edinburgh, Scotland, found in 2,000 consecutive pregnancies, 6.5% syphilitic. (*Journal of Obstetrics and Gynecology*, British Empire, Volume 34, 1927.)
5. A. W. Stillians, Chicago, Illinois, found in the clinics of the Chicago Lying-In Hospital from 1917 on, that of 6,954 women, mostly white, 6% were syphilitic, of 814 colored women, 19.2%, a general average of 7.4% syphilitic. (*Archives of Dermatology and Syphilology*, March 1928.)
6. C. Leon Wilson, Chicago, Illinois, from 1920 to 1927 studied 3,631 colored pregnant women of all social classes and found an average of 7.49% syphilitic. The per cent. syphilitic declined fairly continuously from 15.1% in 1920 to 4.7% in 1927. (*American Journal of Obstetrics and Gynecology*, Volume 18, August 1929.)
7. J. L. Pomeroy, Los Angeles, California, reported (by letter) that in 517 routine Wassermanns on pregnant white, Mexican and Japanese women 8.1% were syphilitic.
8. Valeria H. Parker, American Social Hygiene Association, New York, N. Y., in a study of 15 clinics in 15 communities (1925) found a general average of 8.3% syphilitic among 6,300 prenatal cases. (*Journal of Social Hygiene*, February 1929.)
9. J. N. Cruickshank, London, England, in 1920-1921 studied in the Glasgow Royal Maternity and Women's Hospital 1,881 pre-natal patients, mostly ward, among which 9.04% were found syphilitic. (*Medical Research Council, Child Life Investigations*, London, 1924.)
10. J. Whitridge Williams, Baltimore, Maryland, from 1916 to 1919 examined 4,000 pregnant white and colored women of whom 11.2% had syphilis (1,839 white women, 2.48%; 2,161 colored, 16.29%). Of 302 foetal and neonatal deaths resulting from 4,000 pregnancies, 34.4% were due to syphilis. (*Johns Hopkins Hospital Bulletin*, November 1922 and May 1920.)
11. In the Detroit Department of Health prenatal clinic among 4,120 consecutive admissions before 1926, white and colored, 13.7% were syphilitic. A study of 699 white women in 1922 showed 8.7% with syphilis, of 619 colored women, 19.3%. (*City Health, Detroit Department of Health Bulletin*, May-June 1926.)
12. J. R. McCord, Atlanta, Georgia, in 1925 reported among 300 colored pregnant women 22.3% with syphilis. Of pregnancies "ending disastrously" 31.7% were due to syphilis. (*American Journal of Obstetrics and Gynecology*, June 1925.)
13. The Department of Health, Birmingham, Alabama, in 1928 and 1929, found among 735 white and colored women 22.3% syphilitic (116 white women 8.7%; colored women, 24.8%). (Mimeographed report of prenatal clinic.)
14. J. C. Gebhart, New York, N. Y., 1917-1923, found 23.3% syphilis among 1,224 pregnancies of colored women. (*Journal of Social Hygiene*, April 1924.)

Experience in clinics and private practice has shown that a large reduction in the prevalence of syphilis in pregnant women and in Foetal and Neonatal deaths due to syphilis can be accomplished by effective treatment. At a later date it is proposed to tabulate some of the more important recorded data showing the death rates of babies of mothers who had no treatment and the reduced mortality among babies born after the carrying out of adequate treatment.

Prepared by the American Social Hygiene Association, 370 Seventh Avenue, New York, N. Y., October 1929.

This material was forwarded by the Department of Public Health of Lynn.

CORRESPONDENCE

A PLEA FOR A DEFINITION OF THE FIELD OF HEALTH EDUCATION

March 11, 1930.

To the Editor,
New England Journal of Medicine.

Sir:

Dr. Cheever in his letter of January 16 asks for a discussion of the problem of what shall be the attitude of the medical profession toward health work, stating that "the present age of publicity, advertising, of efforts to promote the health of the people by public or quasi-public agencies such as Boards of Health, insurance companies, industrial clinics, school clinics, charitable hospital clinics, and by radio broadcast health talks, tend more and more to attract patients from the office of the regular general practitioner, and in some instances to advertise a physician or group of physicians who are the instruments of these agencies." Someone has stated that most discussion arises from a failure to define ter[illegible]. In this instance also our difficulty, I believe, arises from a failure to define accurately what is the art and practice of medicine.

The State Health Commissioner* of Virginia calls attention to the following principle of Hippocrates: "Medicine consists of two divisions, the preservation of health and the cure of disease, and true medical success follows if a proper sequence of these two is observed." The art of medicine, then, consists primarily of the preservation of health and secondarily of the cure of disease.

The preservation of health depends upon health education and it is to the activities in this field by various social organizations that Dr. Cheever refers. When the physician takes the responsibility of the diagnosis and treatment of disease he is rightfully safeguarded both by law and by the ethics of our profession. However, in the health education field the physician has no more exclusive rights than has our public educational system and the various social organizations that Dr. Cheever has mentioned. His bounden duty in this field, as further quoted by Flannagan, is "that medical knowledge should be made popular knowledge; that the uninformed public may be easily made to understand the essentials of this knowledge; and, further, that if the medical man cannot get his message across to common folk

*Flannagan, Roy K., "Hippocrates The Modern Physician," *Virginia Medical Monthly*, January, 1929.

he, to that extent, fails in his mission." Hippocrates further says, "It appears to me that whoever treats of this Art should treat of things which are familiar to the common people. . . . But whoever does not reach the capacity of the illiterate common folk and make them listen to him misses his mark." Here, then, is recognized a different procedure in carrying on the first division of the physician's practice in the preservation of health from that of the second division, the cure of disease.

The organizations that Dr. Cheever refers to are in the field of health education. For example, the insurance company employs the physician to rule out disease—not to make final diagnoses and give treatment. If the applicant has a tumor he is referred to his physician to determine its nature; if he has albumin in his urine, high blood pressure, is seriously over- or underweight, or has other pathological conditions he may be refused insurance until the condition is corrected by a surgeon or physician. The object sought by the insurance company is not to engage in the practice of medicine but to furnish to the applicant just rates of insurance when disease is ruled out.

What is going on in our school clinics? There, also, the duty of the school physician is to identify disease and refer the patient to his doctor and thus protect other pupils from the dangers of contagious disease and protect the individual child in his work if not in physical condition to carry it on. The pupils are not his patients. He does not assume responsibility for the treatment of the sick.

Let us consider our milk stations in Boston for well babies and children. In a single afternoon some seventy children may be brought to a single station. Here, again, the physician is there to rule out disease, not to treat it. In the hour and a half of his professional time he can only see new cases and special ones to whom the nurse calls his attention. The great bulk of the work is that of health education in instructing the mothers and is carried on by a specially trained corps of nurses. If no doctor attended these clinics and it was simply assumed that the babies were well I venture to say that the major part of the benefit from this wonderful work would still be realized.

What member of our profession wants to go to a Mothers' Meeting and inform them that they are doing work that trespasses on that of the medical profession and, therefore, should be discontinued? Is it the duty of the medical profession to say that all this work that is serving humanity in such a beneficent way shall stop or that the physician is a "health station" and all persons, sick or well, should be referred to his office for health inspection and instruction?

Dr. Cheever states that these agencies are commendable when carried on by regularly organized charitable organizations; but why are they not commendable when the self-respecting person wishes to pay a fair price for such services rather than be pauperized or receive them from the state?

The point of view that the physician has the same exclusive rights in health education that he has in the treatment of disease has led the medical profession to resist the encroachment of health work in schools, of social service work and even to this day of our public health service—an intolerant attitude that is described by Osler in his "Counsels and Ideals" as "the curse of the medical profession". This intolerance has led and is leading the public to distrust our profession. "What," said a business man, "doesn't the doctor want people to be well?" This intolerance is, in my experience, the greatest obstacle to the progress of health work. A vice president of one of our largest public utility organizations employing thousands of young workers remarked, "After ten years of experience in trying to put over a health program for our operatives, I realize that it cannot be accomplished through the medical profession." On the same day, the Commissioner of Public Health in a city of more than six million population remarked, "I have been connected with this department for ten years. We wish to eliminate all medical work from our department and devote ourselves exclusively to health work but I know that no adequate health program can be put on through the medical profession." In my own experience in various cities throughout the country the chief problem in putting on a health program has been how to secure the coöperation of the medical profession and in the many schools and colleges with which I have had to do, time after time, final plans have been made for the inauguration of a health program only to have them blocked by the physician.

Because of this intolerance the doctor who enters the field of health today finds himself a pariah. He is considered to have left the sacred fold of medicine. He is called mercenary, a trainer of athletes, a faddist in health, a seeker after notoriety. And unless he undertakes such work under charity or his living is provided by some foundation or by the state he does so not only at his professional but also his financial peril. Three of my assistants who allowed themselves to get interested in health work have found themselves ineligible for hospital appointments and, not being able to receive a living wage for health work, have had to withdraw from the field. A leading New York physician remarked, "I do not dare to get identified with such work as I have to earn a living."

It is frequently said that the physician who maintains this intolerant point of view is the general practitioner. I have not found it so. As Osler stated, the general practitioner is the true type of our profession and his public-spirited attitude leads him to welcome health work. For example, in Aroostook County (Maine) the medical society, made up of general practitioners, not only inaugurated a health program for the whole county but undertook its financing and has backed the program up to a man. Opposition to health work seems to come from those who consider themselves defenders of the faith and those who have in mind that such an attitude makes them stronger with their consultants, while to take an active stand for health work might jeopardize their living. Nearly a score of leaders in the profession whom I consulted and whose judgment I have trusted in this matter approved the idea and were

willing to be identified with it but expressed fear of the attitude of the medical profession. In carrying on preventive work in cancer, tuberculosis and in public health the great difficulty is the fear of the medical profession. What wonder that Dr. William Welch says "the application of our knowledge is pitifully small". Yet health education work is work that all concede to be the most desirable—prevention.

It seems to me high time for the medical profession to define unmistakably the field of health education and that of the practice of medicine with the recognition of the principle stated by a former president of the Massachusetts Medical Society and definitely incorporated in the Code of the American Medical Association that there can be no ethics contrary to the public good.

Very truly yours,
WM. R. P. EMERSON.

RECENT DEATHS

ROCHE—DR. THOMAS FRANCIS ROCHE of Blackstone died at the Woonsocket Hospital, Woonsocket, R. I., following an operation performed a month ago, March 8, 1930, at the age of 74.

He was the son of the late William and Sarah Callahan Roche and was born in Clinton, Mass. His brother was the late Mayor John A. Roche, of Chicago.

After studying in the public schools of Clinton, Dr. Roche took an M.D. at New York University Medical College in 1883 and another, the same year, at Bellevue Hospital Medical College, New York, and settled in practice in his native town, while joining the State Medical Society. For a time Dr. Roche practiced in Framingham, finally settling in Blackstone in 1892. He was at one time chairman of the school committee. He is survived by one sister, Mrs. James Campbell of Marlborough.

SHREVE—DR. OCTAVIUS BARRELL SHREVE, a retired physician and former president of the Boston jewelry firm of Shreve, Crump & Low Company, died at his home in Salem, March 13, 1930, aged 88. He was born in Saco, Me., June 4, 1841, and was the son of Benjamin and Elizabeth Perkins (Shannon) Shreve. He studied at Harvard, where he received his A.B. in 1863, and an A.M. two years later.

He took his medical course at Columbia University, College of Physicians and Surgeons, New York, and there he received his M.D. in 1865. Taking up his residence in Salem he practiced medicine there, joining the Massachusetts Medical Society in 1869 and being retired in 1906. He engaged thereafter in the management of estates and in business.

Dr. Shreve had been a member of the Algonquin Club of Boston and of the Eastern Yacht Club. He was a member of the Episcopal Church and had devoted much time to travel and the study of art. He had a country home at Topsfield, his home in Salem being at 29 Chestnut street.

On July 28, 1864, he married, in Salem, Sarah Cox Deland and there were three children, Mrs. Genevieve Shreve Pierson, Benjamin Deland Shreve and Mrs. Mary Shreve Northey. Of these only the son and one daughter, Mrs. Northey, survive.

BLANCHARD—DR. RANDALL HOWARD BLANCHARD, eye, ear, nose and throat specialist, died of pneumonia at the Mercy Hospital, Pittsfield, March 14, 1930, at the age of 58.

He was a native of Portland, Me., and spent his early life in Cumberland Center in that state. His degree in medicine was received at Bellevue Hospital Medical College, New York, in 1896.

He settled in practice in Pittsfield in 1900 and devoted himself to his specialty. Several years ago his health broke down and he was obliged to restrict his practice somewhat.

Dr. Blanchard was fond of the great outdoors and bought a farm at New Lenox where he could enjoy country life. He also had two orange plantations at Winter Haven, Fla., where he had spent a part of each winter in recent years. He looked forward to retirement in Florida.

Dr. Blanchard was on the staff of the House of Mercy Hospital and had been in charge of the eye, ear and nose clinic there. He was a member of the Massachusetts Medical Society, the Berkshire Medical Society, Crescent Lodge of Masons, Berkshire Royal Arch Chapter, Berkshire Commandery, Knights Templar, and the Park Club. He attended the First Congregational Church.

He leaves his widow, who was Miss Caroline Harris of Portland, Me., and three sons.

NEWS ITEMS

DRS. COFFEY AND HUMBER APPEAR BEFORE A COMMITTEE OF CONGRESS—Drs. Walter B. Coffey and John D. Humber have appeared before a congressional committee which is considering a proposal to authorize an appropriation of Federal funds for research applied to malignant diseases. Dr. Coffey is reported to have said that "Our clinic has discovered a material created by nature that works as an active principal in regulating the growth of cells that make up the human body. We believe that nature has provided certain controls, among which is a stabilizer of the multiplication of cells.

"This stabilizer exists as an active principal, found in highly potent form in the suprarenal glands—two ductless glands above the kidneys." And further that this stabilizer has "unmistakable effect on malignant tissue". He claimed that "after the first injection, the patient usually gains relief from suffering. After the second and third injections pain disappears. Also as a result of the injection of the extract there is the result that the malignant tissue begins to slough or break up and disappear from the centre".

Thirteen hundred persons subjected to this treatment have shown a breakdown of cancerous tissue but no known cure has been thus far discovered.

Dr. Joseph C. Bloodgood was present and urged the establishment of a Federal Department of Health to be maintained in efforts to curb the ravages of cancer.

A FOUNDATION TO PROVIDE FOR THE MAINTENANCE OF THE GEORGE ROBERT WHITE FUND UNITS—The nucleus of a Foundation has been started by Mayor Curley to provide funds to

meet the cost of carrying on the Health Units established by the George Robert White Fund. These units are built and equipped by the interest derived from the White Fund but the maintenance is provided by the City of Boston.

The gift of $40,000 to the City of Boston by the late George O. Hovey of Gloucester will be used as a beginning to which further donations will be added if the plans of Mayor Curley can be carried out. He will try to secure additions to the extent of $5,000,000 before he completes his term of office.

Judge William M. Prest of the Probate Court and John T. Morse, Jr. of Needham, named as trustees under the Hovey will, have according to statements in the daily press agreed to start this foundation.

Boston is especially favored in having these health units and the assurance of their perpetuity.

APPOINTMENT OF DR. GEORGE L. PARKER—Dr. George L. Parker has been appointed as Assistant Superintendent of the Lakeville Sanatorium. This institution is devoted to the care of extrapulmonary tuberculosis.

Dr. Parker is a graduate of Tufts College Medical School and has completed two years of post-graduate work at the University of Pennsylvania and at the Children's Memorial Hospital in Chicago.

A MAINE TOWN NEEDS A DOCTOR—Attention is called to the fact that a prosperous town of one thousand people in Maine is in need of a physician. Previous practitioners have had an income of from $5,000 to $7,000 a year and the town will pay an honorarium of $1,000 as an inducement.

Mrs. Edna E. Burrill of Carmel, Maine (R. F. D. 1) will answer inquiries.

AN UNEXPECTED CONDITION ASSOCIATED WITH THE DRINKING OF JAMAICA GINGER EXTRACT—More than one hundred persons in the states of Mississippi, Georgia, Rhode Island and Tennessee have been reported suffering with paralysis of the legs.

No fatalities have been reported. The persons affected had been drinking Jamaica ginger. The common symptom is that of inability to flex the legs. Boards of health in the states where these cases have been observed have no explanation of the pathology.

THE INDICTMENT OF MILK—The report of 175 cases of septic sore throat at Ayer, Mass., due to a contaminated milk supply gives further confirmation of the arguments in favor of pasteurization of milk. One wonders how long an intelligent country will allow its citizens to be subjected to such dangers.

MEDICAL PRACTICE IN AFGHANISTAN—Aurang Shah (Khan), an Afghan formerly in the diplomatic service of King Amanullah Khan of Afghanistan, is completing his education at the Tufts Medical School preparatory to returning to his native country to establish a modern medical school and to bring about modern health and sanitary methods among his countrymen.

Outside of small hospitals at Kabul, Herat, Mizarsharif, Jalalaad and Kandahar, which are not at all modern, medical science in Afghanistan is the most primitive. Wounds are dressed by the mothers, wives and sweethearts. Ashes of burned cotton, paper or rags are placed in the wound which is then bandaged up or sewed up with needle and thread.

Diseases are treated by the Mullahs, or priests. They wave a handkerchief or piece of tree branch over the patient while chanting from the Koran. This ceremony is supposed to drive away any disease.

Old women or midwives give the only care during childbirth. Because of the veils and the secludedness in which the women are kept, it would be almost impossible for men doctors to treat them. A good American or European woman doctor could do much for the Afghan women, as the Moslem law would permit her entrance to the women's quarters.

Sewerage disposal and sanitary conditions are practically unknown, so that there are great possibilities in these fields. Introduction of modern sanitary methods into the country will be one of the aims of Mr. Shah when he returns to his native land.

In addition to his association with Tufts Medical School, Mr. Shah has received his degree of Bachelor of Science from the University of Washington and has done graduate study at Leland Stanford University.

ASSIGNMENTS OF DUTY IN THE U. S. P. H. SERVICE—Asst. Surgeon L. C. Watkins has been relieved from duty at Marine Hospital, Norfolk, Va., and assigned to duty at Marine Hospital, Boston, Mass.

Asst. Surgeon A. E. Snowe has been relieved from duty at Marine Hospital, Boston, Mass., and assigned to duty at Marine Hospital, Stapleton, N. Y.

NOTICES

A CANTI FILM TO BE SHOWN IN CAMBRIDGE

The Cambridge Tuberculosis Association and Cambridge Medical Improvement Society have issued invitations to a showing of a remarkable scientific moving picture of cell life and growth at New Lecture Hall, Harvard University, Kirkland Street, corner Oxford Street, on Monday, March 24, at 4.45 P. M.

This three-reel film was produced by Dr. R. G. Canti, at St. Bartholomew's Hospital, London, and shows under high magnification the processes of growth and reproduction in living cells, and the action of radium.

Dr. Robert B. Greenough will preside.

The meeting is open to the public. Admission free.

THE HOSPITAL OF THE FUTURE

Dr. Lee K. Frankel, second Vice President of the Metropolitan Life Insurance Company, Commissioner of the State Department of Social Welfare, member of the Committee on the Cost of Medical Care, will deliver an address at the annual meeting of the Hospital for Joint Diseases, 1919 Madison Avenue and 123rd Street, New York City, April 1, 1930 at 8:30 P. M. The subject of his address is "The Hospital of the Future."

UNITED STATES CIVIL SERVICE EXAMINATIONS

Medical Officer
Associate Medical Officer
Assistant Medical Officer

Applications will be rated as received by the U. S. Civil Service Commission at Washington, D. C., until June 30, 1930.

The United States Civil Service Commission announces open competitive examinations under the above titles for filling vacancies occurring in the Federal classified civil service throughout the United States, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

REPORT AND NOTICES OF MEETINGS

NEW YORK ELECTROTHERAPEUTIC SOCIETY

At the Annual Meeting of the New York Electrotherapeutic Society on Wednesday evening, March 5, the following elections were made for the ensuing year:

William Bierman, M.D., President, 471 Park Avenue, New York, N. Y.

William H. Guillium, M.D., Vice President, 505 Fourth Avenue, Asbury Park, N. J.

Floyd O. Reed, M.D., Treasurer, 183 South Broadway, Yonkers, N. Y.

Madge C. L. McGuinness, M.D., Secretary, 3 East 85th Street, New York, N. Y.

Executive Committee: Charles R. Brooke, M.D., Cassius L. deVictoria, M.D., Leon T. LeWald, M.D., Heinrich Wolf, M.D., Frank T. Woodbury, M.D.

MADGE C. L. MCGUINNESS, *Secretary.*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the amphitheatre of the Peter Bent Brigham Hospital at 8.15 on the evening of Tuesday, March 25.

Program:

Presentation of cases.

Paper—"The Rise of Medicine at Salerno in the Twelfth Century." Dr. George W. Corner of the School of Medicine, Rochester University.

WM. P. MURPHY, M.D., *Secretary.*

THIRD PHYSICAL THERAPY CONVENTION

The New England Physical Therapy Society (Membership limited to physicians accredited with State and County Credentials) will hold a Convention April 16, 17, and 18, 1930, at the Hotel Copley-Plaza, Boston, Mass., under the auspices of the New England Physical Therapy Society and the American Physical Therapy Association.

The meeting will be devoted to physical treatment.

Papers and discussions will be presented by eminent practitioners in the United States and Canada.

There will be an interesting display of modern apparatus by leading manufacturers of Physical Therapy appliances.

The evening of April 17 will be devoted to a banquet and address—7:30 P. M. at the Hotel Copley-Plaza.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24, 1929.

March 20—New England Hospital for Women and Children. Complete notice appears on page 556, issue of March 13.

March 21—New England Roentgen Ray Society. Complete notice appears on page 556, issue of March 13.

March 25—Harvard Medical Society. Detailed notice appears elsewhere on this page.

March 26—Clinic at the Boston City Hospital. Complete notice appears on page 556, issue of March 13.

March-October — International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24, 1929.

April 14-18—The New England Public Health Institute. Complete notice appears on page 55, issue of January 2.

April 16-18—Third Physical Therapy Convention. Detailed notice appears elsewhere on this page.

May 2—Annual Meeting of the American Society of Stomatologists. Detailed notice appears on page 92, issue of January 9.

May 5-10—First International Congress on Mental Hygiene. Detailed notice appears on page 93, issue of January 9.

September 4-8—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31, 1929.

October 27—The American Public Health Association. Detailed notice appears on page 1271, issue of December 19, 1929.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

May 1—Thursday--Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M. sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 14—Wednesday—Annual Meeting, at Anna Jaques Hospital, Highland Avenue, Newburyport, Mass., at 12 noon. Subject, "Infective Foci: Sense or Nonsence." There will be talks and discussions on the subject from individual points of view, by seven physicians engaged in nine of the specialties of medicine, and from the dental standpoint.

J. FORREST BURNHAM, M.D., Secretary.

Essex South District Medical Society

Wednesday, April 2, 1930—Hotel Hawthorne, Salem. Dinner at 7 P. M. Speaker: Dr. Timothy Leary, Boston. Subject: "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infections."

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The next meeting of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesday of May, at 11 A. M.

CHARLES MOLINE, M.D., Secretary.

Hampshire District Medical Society

April 9—This meeting will occur at 11 A. M. and will be held at the Dickinson Hospital, Northampton.

The Annual Meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

May 13—At Unicorn Country Club, Stoneham.

ALLAN R. CUNNINGHAM, M.D., Secretary.

Middlesex South District Medical Society

April 16, 1930—Annual Meeting. Commander Hotel, Cambridge. Program to be announced.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, M.D., Secretary.

Norfolk District Medical Society

March 24, 1930—Roxbury Masonic Temple. Dr. Burton E. Hamilton. Subject: Heart Diseases in Relation to Pregnancy.

May 1, 1930—The Censors meet for the examination of candidates, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

May 6, 1930—Annual Meeting. Program to be announced.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK, M.D., Secretary.

Plymouth District Medical Society

March 20, 1930—Moore Hospital, Brockton. Detailed notice appears on page 556, issue of March 13.

April 17, 1930—Annual Meeting, Commercial Club, Brockton, 7 P. M. Election of officers. Annual oration, Dr. Frederick F. Weiner, "The Management of Prostatic Diseases," with moving pictures.

G. A. MOORE, M.D., Secretary.

BOOK REVIEWS

Local Anesthesia in Otolaryngology and Rhinology. By JAMES JOSEPH KING. Published by Paul B. Hoeber Inc. 1926. Price $5.00.

An interesting book on local anesthesia by James Joseph King of New York is presented for review. Notable phases are (1) the official reports on the toxicity of local anesthetics made by the special committee of the American Medical Association between 1919 and 1924, which occupies the second half of the book; (2) the detailed review (pp. 83-88) of the Koebbe, Neumann and Lubet-Barton methods for obtaining local anesthesia in ear and mastoid work; (3) the chapter on the synergistic action of morphine, magnesium sulphate and novocaine (pp. 43-52); and (4) the technical discussion (pp. 14-42) of the chemistry and toxicity of the standard drugs employed:—cocaine, novocaine (or procaine), epinephrin, and the less used substances, butyn, apothesine, beta-eucaine and stovaine. Pages 53 to 80 deal with details of nose and throat anesthesia. Here the author covers a broad field rather hurriedly. A little more anatomical detail in the treatment of different nerve-blocks would help the reader who seeks here directions for securing operative anesthesia.

An adequate reference to the reports of the special toxicity committee of the American Medical Association would be inappropriate here. Some of the points of their summary on p. 132 are:— 1) None of the synthetic products equals cocaine in its local effect when applied to the mucous membrane. 2) These synthetic products may be freely injected if slowly done, in proper doses in unlimited quantities. 3) The drug is eliminated in the liver. 4) The greatest danger lies in too rapid injection or entering a vein. 5) Fatalities either occur immediately or not at all. 6) The dangers of hemorrhage during tonsil operations under local anesthesia are no greater than under general anesthesia.

On pp. 174 to 176 the committee offers (in part) the following recommendations in inducing local anesthesia in adults:— 1) Cocaine has considerably the greater number of fatalities. It should not be injected into the submucous tissues or subcutaneously. 2) Cocaine paste ("mud") is unreservedly condemned.—Local anesthetics may be applied safely in the following concentrations and total amounts: Cocaine in the mouth and epipharynx (pre-operative), 5 per cent.; in the nose, not over 10 per cent., and in total amounts of from 10 to 15 minims, containing from 1 to 1.5 grains; in the eye, not over 5 per cent.; in the larynx and bronchi, not over 20 per cent., preferably 10 per cent. in two applications, and not over 15 minims total, containing from 1 to 1.5 grains. Procaine should not be used in greater concentration than 1 per cent.; apothesine, not greater than 2 per cent. Not more than 1.5 grains of apothesine should be injected for one patient. The use of butyn by injection appears inadvisable because of its relatively high toxicity; if injected at all, the concentration should not exceed 1 per cent. nor the total dosage 1 grain. Butyn may be applied in a 2 per cent. solution. Epinephrin serves a valuable purpose in causing a bloodless field and in delaying the absorption of the local anesthetics, especially procaine, but the addition of epinephrin in amounts of 1 mg. or more to a solution of cocaine often results in a greater degree of toxicity than that from cocaine alone when rapid absorption takes place; hence, the use of larger doses of epinephrin should not be used in greater concentration than 1:10,000 and of this not more than 10 minims with cocaine. All solutions should be freshly made, should be sterile, and at about body temperature.

When severe toxic symptoms result, efforts should be made to sustain the heart in order that the drug may be carried to the liver, where it is destroyed. Cardiac massage, artificial respiration and perhaps epinephrin in proper intracardiac doses (2 c.c. of a solution of 1:10,000, the needle to be inserted at least three inches) are indicated when the heart has stopped. The use of sealed ampules of procaine (novocaine) tends to prevent the substitution of cocaine. Further dangers of substitution can be avoided by tinting cocaine with fluorescine. All amounts used should be carefully measured.

Morphine has a distinct field of usefulness in allaying the apprehension of nervous patients before operation, but it is necessary to sound a note of warning against large doses or repeated small doses. It seems probable that morphine and scopolamine are synergistic with the local anesthetics in their actions on the respiratory center.

On pp. 167-170 the synergistic action of combined drugs is discussed. "When two local anesthetics are combined, the total toxicity is apparently that of the sum of the two."

In chapter VIII the author reviews in helpful detail the research work on the synergistic action of morphine, magnesium and novocaine. Each is found to reënforce the sedative action of the others.

Magnesium alone proved a dangerous anesthetic but "one of the safest and most valuable drugs in the pharmacopeia" when used in this combination. For the average patient of 130 to 150 pounds the author recommends the following (p. 51):—

1) The patient should not be allowed food after midnight when an operation is to take place in the

morning and not after 9 A. M. when the operation is scheduled for the afternoon.

2) Three hours before the operation is to take place administer intramuscularly deep into the thigh, deltoid or subscapular region 2 c.c. of a sterile 50 per cent. solution of magnesium sulphate combined with 2.5 per cent. novocaine and 1/8 grain morphine.

3) Thoroughly cleanse the site of injection with iodine and alcohol and be sure the needle and syringe are absolutely sterile.

4) The lights should then be dimmed, the patient kept quiet and the surrounding conditions should be conducive to relaxation.

5) Repeat the intramuscular injections at half-hour intervals until three doses have been administered.

6) One-half hour after the last injection the patient should be carried to the operating room on a stretcher and transferred to the operating table; it is very important that the patient should not exercise even to the extent of walking to the operating room after he has received the preliminary medication.

Osteomyelitis and Compound Fractures. By H. WINNETT ORR. The C. V. Mosby Co., St. Louis, Mo., 1929. 208 Pages. Price $5.00.

In this book of 185 text pages, the author describes his "Orr Method" of treating "Osteomyelitis" (see page 79) and Compound Fracture Wounds (see page 124). Treatment is the only phase dealt with in either subject. The book is really the author's presentation of his "method." He draws no distinction between Acute and Chronic Hematogenous Osteomyelitis, and the direct bone infection of Compound Fracture—all are simply "bone infection". It might be more appropriate to entitle the book "'The Orr Method' of treatment of bone infection".

The treatment outlined by the author consists in "wide open" drainage of the involved area, followed by iodinization and packing the wound with vaselin gauze which is covered with a sterile gauze dressing. A plaster of Paris splint is then applied to fix the part in the functional position. The wound is left strictly alone until some weeks have elapsed (just when is not clear), unless constitutional manifestations of sepsis arise, or fouling from discharge becomes too obnoxious.

Ample drainage the author accepts as a fundamental truth; to Lister he attributes the importance of not disturbing the wound by too frequent or traumatizing dressing; to Hilton and others the secret of rest; and to Dr. John Ridlon (as far as the author's personal education is concerned) the value of plaster of Paris splintage applied along Orthopaedic lines. The author combines these established surgical principles into the plan of treatment given above, which he claims to be applicable to all forms of pyogenic inflammation of bone and superior to other treatments.

No detailed end result summaries of treatment are given. The reader is left ignorant of such matters as the resulting time of disability, permanence of recovery, amount of deformity, rate of healing, joint disability, muscle atrophy, the infecting organism, etc. Instead, the author endeavors to prove his claims for "The Orr Method" and to substantiate his criticism of other methods by miscellaneous case histories, occasional Roentgenograms, and testimonials and quotations from other surgeons.

As the author holds, the underlying surgical principles of treatment in this method are sound. They are well known to all soundly trained surgeons, and have been constantly applied by such surgeons with equally good claim for many years. (The idea of not dressing the wound for "two weeks or more" should be conceded to the author.)

Dr. Orr condemns the skeletal traction-suspension treatment of fractures as being either unsound, surgically, or too difficult of application for general use. He suggests as preferable, fixation by the old method of incorporating in a plaster of Paris splint mold skin traction straps; or else he incorporates in the plaster pin or tongs inserted into the bone to provide fixation of fragments.

The author, referring to plating and the use of screws at the site of fracture, states that these measures "Can be mentioned only to be condemned". Here again no end result tables are given.

There is scarcely a word contributed by the author in the entire book on the pathology of osteomyelitis, either Hematogenous or by direct infection—acute or chronic. Six pages of quotation from the work of another author suffice as a pathologic basis for the statements made in the book.

In the preface the author resents the criticism that his work "lacks scientific foundation". Yet he offers his conclusions without confirming them either by a convincing end result series of cases or by cytologic, bacteriologic, or gross pathology analysis of his wounds. He pleads for a "science in practice and in literary research". Why, then, does he not compile his results and analyze them that the good which is in this method may be accurately determined, and the fallacious be removed?

Research and Medical Progress and Other Addresses. J. SHELTON HORSLEY, M.D. C. V. Mosby Co., St. Louis, Publishers. 201 pages. $2.00.

Since these addresses and papers have with one exception been published elsewhere, it seems fair to inquire into the reasons which warrant their collection in the volume under review.

Horsley has been one of the leading surgeons in the South for many years, and to his numerous disciples the book will be a pleasing memento of some of his teachings, both narrowly in the field of surgery, and broadly in the fields of medicine, science, and research.

Beyond this rather obvious function, however, the reviewer can find little to justify the republication of these addresses. One finds no mellow prose or gracious wit to permit the book to be judged as *belles lettres*. There is no continuous development of an idea which is disclosed by bringing the essays together. The subjects range from research and physiology in relation to medicine, to gastric pathology

and symptomatology, and further to politics and medicine. Some of the presidential addresses, reproduced unchanged, retain the minutiae of unfinished business, appointments of committees, and so on. The papers on gastric conditions are largely warmed over portions of the author's admirable technical books on these subjects.

The author's views on medical ethics, training and ideals of the surgeon, relation of research to practice, and so on, are orthodox, sound, and not novel. Representing the addresses of the chairman of a meeting, they are admirable. It seems unfair to their author to disinter them for exhibition in book form.

A Diabetic Manual. By ELLIOTT P. JOSLIN, M.D. Published by Lea & Febiger, Philadelphia. Pp. 248. Price $2.00.

Little need be said of the very important part played by this manual in the treatment of diabetes all over the United States. One always looks with interest to see what additional material has been put into any new edition.

There are seven new chapters and forty pages have been added.

The hopeful attitude toward diabetes which has developed in the past few years is evidenced by the headings of the new chapters which are "The Prevention of Diabetes", "The Expectation of Life", "Heredity and Marriage", and a new chapter on "An Insulin Syringe", besides chapters on the difference between diabetic coma and insulin reactions, surgery and diabetes, and diabetic children.

The book has, if anything, been made a little clearer than before and one notices the addition of many human touches. Children especially have a more important place and there are many pictures of diabetic children at work and play. The classic chapter on "Dogs, Diabetics, and Their Friends" has, we are grateful to say, been left untouched.

Mother and Unborn Child. By SAMUEL RAYNOR MEAKER, Associate Professor of Gynecology, Boston University School of Medicine. Baltimore: The Williams and Wilkins Company, 1927.

Of the many medical treatises for the laity on so-called pre-natal care, this monograph of Dr. Meaker's is one of the most satisfactory. To it are added several chapters on the care of the new-born baby and its mother. As a book of information and advice for the prospective mother this volume is to be recommended highly. Its value is increased by twenty-two well chosen illustrations.

Nursing in Emergencies. JACOB K. BERMAN, M.D. C. V. Mosby Company. St. Louis. 1929. Pp. 160. Price $2.25.

This volume on emergency nursing is compact and useful. There are so many books on first aid, particularly due to the work of the Red Cross during war time, that an additional text is hardly necessary. However, this one is considerably more detailed than many of the first aid manuals. Nurses should find this little handbook a useful adjunct to their libraries.

A Manual of Proctology. By T. CHITTENDEN HILL, PH.B., M.D., F.A.C.S. 264 pages; 86 engravings, Lea & Febiger, Philadelphia, 1929. Price $3.50.

A manual of diseases of the rectum of the type that is valuable to every physician or surgeon who accepts the responsibility of a rectal examination. The much needed details for the examination and treatment, both operative and non-operative, are described. Thus the relative merits of the injection and operative treatments for internal hemorrhoids, as well as the technique of each are given. The section on cancer of the rectum has been written by Dr. E. P. Hayden who describes in detail the one and two-stage, combined abdomino-perineal operations as developed by Dr. D. F. Jones, in addition to the more standardized procedures.

We recommend the book to those who desire a concise detailed discussion of the diagnosis and treatment of the various diseases of the rectum and anus.

A Handbook of Clinical Gynecology and Obstetrics. By RAE THORNTON LAVAKE, A.B., M.D., F.A.C.S., Minneapolis. St. Louis: The C. V. Mosby Company, 1928. Price $4.00.

This volume is designed as a textbook for students and recent graduates in medicine. Its aim is to present a cross-section of a gynecological clinic or office practise with a systematic method of diagnosis and treatment. To this is added a second part whose aim is to give a similar view of obstetric problems arranged according to their relative practical importance. It is not a textbook of descriptive exposition, but a practical clinical treatise or office manual for the young practitioner. It is well illustrated with thirty-five text figures, all of which are limited, however, to the first quarter of the book. It would be well in a subsequent edition if others of equal merit were added in the subsequent pages.

The Baby's First Two Years, by RICHARD M. SMITH, A.B., M.D., Sc.D., Assistant Professor of Child Hygiene, Harvard Medical School and School of Public Health; Associate Physician, Children's Hospital; Visiting Physician, Infants' Hospital, Boston. Boston and New York, Houghton Mifflin Company. Price $1.75.

This famous little book has now gone on to its third edition and fifteenth printing, which speaks well for the continuance of its deserved popularity; for it is certainly the best of its kind on the market. It continues to be sensible, practical and conservative, the only changes incorporated in this edition consisting in a bringing up to date of its material, mostly in the matter of diet. Generations of mothers have doubtlessly been worried over the necessity of an open fire in the nursery, for they have been forced to do without it; this, however, is a detail which warrants only passing mention.

The writer, who has reviewed many books of this type which have come on the market, repeats his assertion that "The Baby's First Two Years" remains the best of the lot.